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ART. XVII. THE BIRDS OF THE UINTA BASIN, UTAH

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(PLATES XXXIX-XLIX)

INTRODUCTION

The limitations and apparent isolation of the Uinta Basin, and its position as the focal point of a large number of species of birds from the east, west, north, and south, made this area a most desirable point for intensive and systematic field work in ornithology. The present paper is based on the Carnegie Museum Expedition to the Uinta Basin in the summer of 1937, although the one season spent in the Basin cannot be considered as a complete and exhaustive study.

The study of the birds of the region was undertaken partly because of the wide interests of the various sections of the Carnegie Museum in the Basin. For many years extensive paleontological investigations have been carried out, as well as studies in the fields of botany, mammalogy, entomology, herpetology, and conchology. In 1937, Dr. Edward H. Graham published a report of his botanical studies. The remaining studies will appear as separate publications in the "Annals of the Carnegie Museum" and will constitute a biological survey of a restricted area set off by natural physiographic features that make of the Uinta Basin a unit in the intermontane area of the United States.

The expedition of 1937 was the first ornithological survey of the area as a unit. Previous to this, Mr. A. C. Lloyd collected intensively around the vicinity of Jensen, concentrating his efforts on the Ashley Creek marshes two miles south of Jensen. He also made a few trips south and north of Vernal. This work was conducted between May 18 and May 30 and from July 20 to August 11 in 1934, and April 23 to August 24 in 1935.

During the expedition made by the author in 1937, as many of the plant communities as possible were visited. The area, as had been suspected, proved to be a zone of intergradation between many western races of birds. The extensive work of Graham (1937) on the botany of the region has greatly helped the present author in his evaluation of the communities.

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The writer arrived in the Uinta Basin on April 30, 1937, and established a base camp at the Ashley Creek marshes, two miles south of Jensen. During the period from April 30 to June 14, trips were made to Powder Springs, Diamond Mountain, Dinosaur National Monument, Blue Mountain, Cottonwood Springs, Horseshoe Bend, Green Lake, and Ashley Canyon.

Mrs. Twomey joined the expedition on June 12. On June 16 we broke camp at Ashley Creek and started for Indian Canyon, twenty miles southwest of Duchesne. From June 17 to 20 we camped at Indian Canyon. From June 20 to 28 we worked out from Vernal to Jensen, Ashley Canyon, Powder Springs, Blue Mountain, and Cottonwood Springs. From June 29 to July 5 we established a camp at Green Lake and worked over the immediate vicinity. Here Miss Ruth Trimble joined us, remaining until July 10. We returned to Vernal on July 6 for supplies, and from July 7 to 10 we camped at Paradise Park. July 11 to 15 was spent in Vernal. From July 16 to 21 we camped at Bald Mountain northeast of Kamas. From July 22 to 27 we traveled from Vernal to the Yampa River north of Elk Springs, Colorado, and Beaver Creek, northwest of Ladore, Colorado. From July 28 to August 9 we worked at Ouray, Florence Canyon, Hill Creek, and Ashley Creek marshes. Between August 10 and September 9 trips were made to Brigham City, Strawberry Reservoir, Moon Lake, Powder Springs, Bonanza, Rangely, Uinta Canyon (Big Uinta Park), Utah Lake, and Heber. From September 11 to 15 we worked from our camp at Green Lake. We set up a base camp again at the mouth of Ashley Creek between September 16 and 30. We left the Basin on October 3, and from October 4 to 25 we collected further in central and southern Utah at Fish Lake, Cedar City, St. George, Pine Valley Mountains, Santa Clara, Beaver Dam Mountains, Kanab, and north of New Harmony. On October 26 we started back for Pittsburgh, Pennsylvania.

GEOLOGY OF THE UINTA BASIN

The Uinta Basin is an area of great interest to geologists and paleontologists. Consequently, its delimitations have been defined many times and on a whole, these definitions have been fairly consistent. For the purposes of this paper the following discussion covers the existing ideas and delimits the Basin as a unit in the intermontane area of the United States. On the north the Basin is bounded by the main east-and-west

range of the Uinta Mountains. The western spur of the Uintas merges with the divide at the headwaters of the Duchesne and the Strawberry river drainage on the west. The whole southern boundary is sharply marked by the southern escarpment of the Tavaputs Plateau which breaks off into the Brown Cliffs. This includes the whole drainage system of streams running north into the Strawberry, Duchesne, and White rivers east as far as Piceance Creek. The eastern limits of the Basin are not so distinct. Graham (1937, p. 25), in speaking of the floristic composition and physiographic considerations, says: "The extreme eastern end of the Basin is the only place in which the boundary is not strictly defined by drainage . . . In the east we arbitrarily consider the Basin to be limited by the ridge west of Government and Sheep creeks, Colorado and, northward, by the Gray Hills west of Strawberry Creek, Colorado. While this limitation excludes the upper White River and its tributaries, such a limit seems topographically justified. By certain floristic distinctions also, this boundary is the apparent transition area between the desert conditions of the Basin to the west and the more mesophytic conditions of the Rocky Mountain foothills to the east. From this eastern limit, including the westward drainage of the Citadel Plateau, the boundary of the Basin swings westward into the divide at the head of the south-flowing tributaries of the White River."

The Green River transects the entire Basin from north to south, cutting through the Uinta range on the north and the Tavaputs Plateau to the south. The river runs in a south-southwesterly direction and is the master stream for the entire drainage system of the Basin.

As a basis for the existing communities in the Basin, the geological formation of the area and the present exposed surface is of significance. Graham (p. 31) found no correlation of the vegetation with the underlying geological formation. Rather the altitudinal communities conform with altitudinal limits despite the parallel series of both formations and vegetation along the south slopes of the Uinta Mountains. He states: "Where environmental factors, such as rainfall, temperature, length of growing season, etc., begin to vary with difference in elevation, the geological formation, even though composed of a homogeneous soil, has still less influence upon the vegetative cover." There were, however, numerous local edaphic factors within their altitudinal limitations that affected directly the vegetative cover, such as the preference of *Juniperus utahensis* for gravel, and *Kochia vestita* (Gray Molly) for highly alkaline soil.

Geologically speaking, the Uinta Range was formed by an immense up-

lift during the late Cretaceous period. The movement that produced this great fold was accompanied by little fracturing and by no intrusion of igneous rocks. During the Tertiary and in recent times erosion has been a most active agent in breaking down the structure. At the eastern end of the comparatively uniform fold preexisting Archaean rocks have tended to complicate the geology at this point (Emmons, 1878). To the south the Basin is limited by the uplifts of the La Sal Mountains and San Rafael Swell, which were active in late Tertiary or early Quaternary times. On the east it is confined by the Rocky Mountains and their foothills; on the west, by the Wasatch Mountains, which were thrown up during the general uplift that elevated the high plateaus of Utah, Wyoming, and Colorado, at about the time of the La Sal and San Rafael swell uplifts.

The establishment of Green River as the master stream of the region has been a point of conjecture. Forrester (1937, p. 660) states "that a major uplift of the Uinta Range took place in late Eocene or early Oligocene time." This was accompanied by large scale faulting and in late Tertiary or early Quaternary time there was another uplift, which was "shown by a marked entrenchment of the meandering Green, Yampa, and other master rivers of the region. It is now generally accepted that the Green River and its tributaries are later in their development than the first Uinta Mountain uplift . . . that is, the Green and the Yampa rivers, in order to maintain their courses, must have been established before this last major uplift began; and this, as has been brought out, had been done at the close of Browns Park (Pliocene) time." Later investigations place Browns Park in Miocene time. Recent fault slips in the area show tectonic action still to be in progress (Peterson and Kay, 1931, p. 298).

There was extensive glaciation in the Uinta Mountains in the Pleistocene that greatly modified the topography, but other parts of the Basin were not affected. Atwood (1909) brings out the fact that there were at least two periods of glaciation. The earlier one was the longer and extended down the canyons of the south slopes of the Uintas to 7000 and 8000 feet. This investigator (1909, p. 65) states: "At the period of the maximum extension of ice, glaciers covered by far the greater portions of the Uinta Mountains west of longitude 109° 40' and a few extended beyond the mountains into the lower country north and south . . . The total area covered by ice was somewhat over 1000 square miles. The portions of the range that rose above the ice near the crest line were lofty peaks and narrow, rugged divides. On the flanks of the range the areas not covered

by ice lay between the great canyons . . . The longest glacier was 27.5 miles long, the shortest independent glacier was 1.5 miles long." Glacial lakes are very numerous in the Uintas. Many occur in chains because of the blocking of recessional moraines.

For the convenience of comparison with the vegetational map of the Basin, Pl. XLIX, the Geological map, Pl. XLVIII by Kay (1934), indicates the main geological formations and the approximate present surface cover, although it does not cover the entire Basin.

DISTRIBUTION AND COMMUNITIES

The Uinta Basin, constituting a wide range of community relationships, is made complex by the presence of altitudinal variations that result in complete climatic changes as far reaching in their component biotic relationships as major biomes. The present study covered only a portion of one year with emphasis upon the avian population and its relationship and distribution to the plant communities of the Basin. Studies at the Carnegie Museum in other taxonomic groups are progressing which, when completed, will give evidence to evaluate the biotic communities under existing bio-ecological concepts.

Ecologists recognize in the tundra, coniferous forest, deciduous forest, etc., a landscape aspect that represents a natural unit. The value of these units, called biomes, cannot be overemphasized by the ecologist. This concept is also worthy of application by the ornithologist.

In a consideration of these terrestrial biomes, vegetation is the dominant or controlling element of the community, whereas animals, in general, are constituents which exert an influence on the community, in varying degree, depending mainly on their abundance, habits, and size. Within these natural units there are developmental or subordinate communities that occur in a definite order of succession which is known as a "sere." In the later development of this succession, sub-climax communities are formed. The last community of such a succession is the climax, which is characterized by the life form of the dominants and is self-perpetuating.

The use of the life-zone concept of Merriam (1898) is used by ornithologists in discussing the general distribution of birds. Grinnell (1914) made an attempt to bring the life-zone concept into harmony with the modern ecological viewpoint. His work, however, was conducted in a mountain dominated region where the life-zones and biotic communities are generally in agreement.

An actual analysis and a discussion of life-zones is not within the scope

of this paper, but it will suffice to say that they have been criticized from the experimental side by Kendeigh (1932), Shelford (1932), and Daubenmire (1938). The final conclusion of Kendeigh (1932, p. 142) states rather precisely the general criticism of this concept: "The life-zone concept, in order to survive, must be based upon the actual distribution of important and significant animals and plants in nature and not upon climatic factors of uncertain preconceived importance." Pitelka (1941) discusses the distribution of birds in their relation to the major biotic communities. Certain species conform fairly well with the limits of biotic communities—for example, the ptarmigan in the tundra biome and the spruce grouse in the coniferous forest biome. On the other hand, many species are not confined to the climax, but rather are sub-climax in position, or as in the cases of the Gray Ruffed Grouse and Sharp-tailed Grouse, are characteristic of seral stages and spread over several biomes.

The ecological niche¹ that a species requires is identifiable with some life form of plant which it will not occupy outside of its normal range if other physical factors exceed the limits of the species' tolerance. Pitelka remarks: "In addition to niche requirements, agreements in distribution with climax communities may represent approximately similar ranges of tolerance to climatic factors." In his summary (p. 135) he brings out several important facts that should be considered critically by the ornithologist:

"Correlation of birds with vegetation reveals no relation to specific dominants or groups of dominants of a single biome; consistent correlation, however, occurs between species and life forms of plants.

"In species ranging over several biomes variation tends to show correlation with climatic factors; among species confined to one major community variation appears to be effected by geographic and biotic factors."

Merriam (1898), Clements (1920), Tidestrom (1925), Cottam (1929, 1933), Dixon (1935), and Graham (1937), have studied the plant components of the altitudinal zones of western North America and of local areas therein, with results that on the whole are fairly consistent; although in many instances where differences occur, they are due to local variations in the areas studied. Graham (1937) evaluated the plant communities of the Basin; he did not attempt to distinguish between climax and seral stages and treated them both as associations.

¹The term *niche*, in referring to a species, entails an intensive study of environmental relations. It is understood to mean simply the environment characteristically frequented by the species.

The following table compares the plant components of the altitudinal zones as used by these men with the present treatment.

	TWOMEY (Present treatment)	GRAHAM, 1937	DIXON, 1935	MERRIAM, 1898
13,500'	Sieversia-Carex Community	Alpine	Alpine Meadow Alpine Scrub	Arctic- Alpine
11,000'				
10,000'	Picea-Abies Community	Spruce-Fir	Sub-Alpine Forest	Hudsonian
8700'	Pinus-Vaccinium Community	Lodgepole Pine	Montane	Canadian
8000'	Populus-Rosa Community	Aspen	Pinus ponderosa	
7000'	Artemisia- Cercocarpus Community	Sub- montane Shrub		Transition
5500'	Juniperus-Pinus Community	Juniper- Pinyon	Pinyon	Upper Sonoran
4500'	Mixed Desert Shrub Community	Mixed Desert Shrub	Northern Semi- Desert Northern Desert Alkali Association	
3000'				Lower Sonoran

For uniformity and lack of sufficient seasonal and qualitative studies of the sere, the term community will be used in the evaluation of avian-plant components of the climax and sere in this paper.

Birds usually are considered to be minor influents in the community, but for the purposes of this paper some will be considered as influents because of their abundance, habits, and size. Migrations, fluctuations in abundance, territorial selection, survival, food relations, etc., all make the evaluation of a bird in its community a difficult problem, at least for the present.

Situated in northeastern Utah, bordering southwestern Wyoming and northwestern Colorado, the Uinta Basin is surrounded on all sides by high

mountain rims or high plateaus. Yet these barriers do not exert any appreciable influence on the general migration or distribution of the avian fauna of the area. The Basin really affords several avenues of migration which under certain conditions may form invasion points of range extensions.

From the south the main migration routes follow up from the Colorado River by way of the Green River, which cuts a deep valley across the Book Cliff Mountains, through the Basin and finally through the Uinta Mountains. The whole drainage system of the Basin proper is into the Green River, and during migrations such forms as *Zonotrichia leucophrys leucophrys*, *Zonotrichia leucophrys gambeli*, *Melospiza lincolni lincolni*, and *Melospiza lincolni alticola*, appear in mixed flocks. Many of the *Zonotrichia l. leucophrys* and *Melospiza l. alticola* pass up the drainage systems of the Basin to the high altitude communities to nest, while *Zonotrichia l. gambeli* and *Melospiza l. lincolni* follow the Green River migration route north, on out of the Basin. Likewise, during the autumnal migration, many of the local nesting migrants follow the drainage system down to the Green River and meet the main body of the northern migrants returning to the south.

In the west, the Provo River opens a migration route through the Wasatch Mountains to the western extremity of the Basin and the western extension of the Uinta Mountains.

During the early spring migration there is a surprising influx of such birds as the Black-necked Stilt, Avocet, and White-faced Glossy Ibis into the Green River floodplain. Just what route they take into the Basin is not clear. They remain in the Basin proper only during May, and by the first week of June they disappear. The nearest nesting concentrations of these species are at Great Salt Lake (Great Bear marshes) and Utah Lake. In their flight out of the Basin they probably move west up the valley of the Duchesne River to Strawberry Reservoir, and then over one of the lower passes into the Great Salt Lake drainage system, where they nest. Another route is from the regions of Strawberry Reservoir west over a low pass into the central Provo valley. From here they can move north and northwest down the valleys of the Weber and Bear rivers into the Great Salt Lake drainage system. The watercourses of the Uinta Basin afford avenues of migration and penetration into or through the Basin which conform with existing migration lanes and distributional boundaries.

The Basin has a wide range of communities, mostly altitudinal, and as a result, a large number of avian forms. Because of its geographic position

the Basin is an area where the ranges of western, eastern, and Rocky Mountain forms meet. There has resulted considerable overlapping of adjacent ranges and a consequent hybridization of such birds as *Junco caniceps* < *J. mearnsi*, *Pipilo maculatus montanus* < *P. m. arcticus*, *Loxia curvirostra benti* < *L. c. grinnelli*, and *Lanius ludovicianus excubitorides*, which shows an influence from *nevadensis* and *gambeli*.

Western birds whose ranges cross the Basin as far east as Colorado are the Gray Flycatcher, Gray Titmouse, Audubon Hermit Thrush, and the Black-throated Gray Warbler. Western birds that reach the eastern extremity of the Rocky Mountains are the Treganza Heron, White-faced Glossy Ibis, Western Red-tailed Hawk, Black-chinned Hummingbird, Batchelder Woodpecker, Ash-throated Flycatcher, Hammond Flycatcher, Wright Flycatcher, Desert Horned Lark, and Townsend Solitaire.

Rocky Mountain forms that reach their western limits at the Wasatch Mountains are the Dusky Grouse, Howell Nighthawk, Natalie Sapsucker, Rocky Mountain Hairy Woodpecker, Rocky Mountain Jay, Rocky Mountain Creeper, Rocky Mountain Pine Grosbeak, and Alpine Three-toed Woodpecker. Eastern birds that reach as far west as the Wasatch are the Eastern Belted Kingfisher, Red-headed Woodpecker, and American Redstart. Southern birds whose range limits extend as far north or into the Uinta Basin are the Western Nighthawk, Western Mockingbird, Western Gnatcatcher, Scott Oriole, Arkansas Goldfinch, and Spurred Towhee. Birds whose distribution is primarily north of the Basin, but whose ranges, in their southern extremities, reach into the Basin, are the Sennett Nighthawk, Black Rosy Finch, Pale Goldfinch, and the Pink-sided Junco. The Basin may then be considered to be situated in an intergradational zone where the breeding ranges of a large number of geographical forms meet. Although the mountains act as barriers for some, the low passes through the mountains tend to eliminate any altitudinal barrier. The barrier to the west beyond the Wasatch is principally the low hot desert stretch of the Great Basin, which extends from the Wasatch to the Sierra Nevada mountains. To the north, east, and south the comparative uniformity of the mountain ranges, their long, low valleys that approximately parallel the direction of migration (north and south), and the cleaving by large drainage systems of the east and west mountain ranges, such as the Uinta and the Book Cliffs, permit the passage of avian forms (and further invasion) under favorable circumstances. An example of an invasion resulting in extension of a breeding range is that of the Scott Oriole. This is a bird of the hot semi-arid country, where it is most

abundant in the lower oak forests of the mountain foothills in southwestern New Mexico and Arizona. The Scott Oriole probably follows the low valleys between the mountains from southwestern Utah (where it has been reported in the Beaver Dam Mountains) to the hot, dry arid region south of the Book Cliffs. Then following the Green River valley, it has made its way into the Basin where, at Powder Springs, it has found a near equivalent of climate and community relationships in the *Juniperus-Pinus* Community.

The Western Mockingbird also has extended its range north into the Basin, probably following the Green River valley. Inside the Basin this bird has found favorable environmental conditions at the lower edge of the *Juniperus-Pinus* Community. Tanner (1936) reports that the Western Mockingbird has moved north from the valley of the Virgin River. It has been found nesting west of the Wasatch Mountains just north of Utah Lake. The present records from the Uinta Basin extend its range to the northeastern corner of the state.

In the Uinta Basin the distribution of avian species conforms with the plant communities, showing very little variation throughout the area. There are some instances, however, of discontinuous altitudinal variations in habitat preference. But when these occur, there is a wide physiological adaptability of certain forms to comparatively wide altitudinal ranges. Even so, the preference for certain vegetational forms and the presence of invasion avenues make the discontinuous ranges possible. The Meadowlark and the Sage Thrasher are particularly abundant over the lower *Atriplex-Tetradymia* and *Artemisia* communities at from 4500 to 5500 feet. In numerous places on the south slope of the Uinta Mountains and the Tavaputs Plateau, deep valleys enabled these birds to follow through a scattering of *Artemisia* to the Sub-montane Shrub Community. At 8000 feet on the *Artemisia* flats of the Blue Mountain Plateau, they were found nesting in large numbers. On the Tavaputs Plateau sage thrashers were encountered with immature birds in the *Artemisia* communities at 9000 feet.

1. Mixed Desert Shrub Community

This is a complex community with an altitude of from 4500 to 5500 feet. The annual rainfall is between 6.7 and 9.5 inches and the average annual temperature is 44 degrees F. It is composed of a large number of developmental communities that form a sere converging from the floodplains and the "bad lands" of the Basin. Ever since the settlement of the Basin in

1873, stock grazing has been the major industry. As a result of this constant over-grazing the winter range which comprises the Mixed Desert Shrub Community is in an advanced state of erosion. Stoddart (1938) says: "More than 95 per cent of the spring-fall and winter range land is subject to varying degrees of accelerated sheet erosion, while three-fourths of the area is in an advanced stage of gully erosion. About one-half of it is being further damaged by wind erosion." This has had a drastic effect on the various communities, and has accelerated the sere in a retrogressive direction rather than the natural advance of succession. Not only the dominant plants have felt this destructive agency but also the influent animals. Over the entire Mixed Desert Shrub Community most of the predators and rodents have been largely extirpated by human agencies.

The following discussions of the community components, from early vernal to late serotinal periods (May 1 to September 1), follow as closely as possible the seral stages of the Mixed Desert Shrub Community and include the dominant plants and influent birds in order of effect.

(a) *Populus-Salix Community*: The floodplains of the lower drainage systems of the Basin are built up by alluvial soils brought down by spring floods. The sand-bar islands and banks frequently are dominated by *Salix exigua*, which in addition to *Salix amygdaloides* form the dense willow thickets of the cottonwood floodplains. The shrub-layer society of the floodplain is dominated by *Rosa puberulenta*, *Rhus trilobata*, and *Lepargyrea argentea*.

In the pure stands of cottonwood, *Populus Sargentii*, the Bullock Oriole and Arkansas Kingbird nest and feed in the upper canopy, the food consisting principally of adult and larval insect forms. The minor influents are the Western House Wren, Long-tailed Chat, and Macgillivray Warbler. The wide-ranging influents of the floodplain and adjoining Mixed Desert Shrub communities are the Eastern Sparrow Hawk and American Magpie.

(b) *Scirpus-Typha Community*: This is best developed at the mouth of Ashley Creek and around the shores of Ashley Creek lake. The community also exists on the Duchesne River between Myton and Duchesne, but not so extensively as at the mouth of Ashley Creek. The swamps are developed by springs or overflows from the rivers and creeks. The damming of Ashley Creek marshes has resulted in a small lake, but the shores, except for the eastern side, form a large Scirpus-Typha Community. Here there is a considerable development in community activities, particularly since the carp (*Carpoides* sp.) has invaded the lake in large numbers from the

backing up of Ashley Creek during the spring floods. Just what will be the status of this community in a few years is not yet clear. But for the present, the American Coot, Yellow-headed Blackbird, and Treganza Heron are the principal avian influents, and the Marsh Hawk is a wide-ranging influent. The minor avian influents include the Thick-billed Red-wing Blackbird, Sora Rail, Long-billed Marsh Wren, and the Northern Yellow-throat.

(c) *Distichlis stricta* Community: This community is best developed in the region of the Ashley Creek marshes. In the spring of the year these meadows of salt grass are often flooded and, because of their impervious subsoil, act as catch-basins. The resulting ponds are temporary but afford excellent feeding grounds for large numbers of migrating ducks, plovers, sandpipers, willets, dowitchers, phalaropes, ibis, herons, and egrets. The Nevada Savannah Sparrow and Western Meadowlark remain to nest in the dense salt grass that grows back from the edges of the ponds. Throughout the summer, as long as water remains in the meadows, the Treganza Heron returns each day to feed on frogs or small fish that have been carried in from the Green River by the spring floods.

(d) *Bare-ground* Community: This comprises the "bad lands" of the Basin, which are extensive along the east side of the Green River from the Dinosaur National Monument south. This type of community usually flanks the lowlands of the major streams. The soil is very poor and, by constant erosion of its shales, sandstones, and clays, the whole community is cut up into gullies. The vegetation is limited to a few greasewoods along drainage ways, or in spring to a few dwarfed species that have invaded from adjoining communities. Bird life is scarce, but the precipitous clay, sandstone, and shale cliffs afford excellent nesting sites for the Prairie Falcon; and the rounded gravel knolls are suitable nesting sites for the Nighthawk. Both of these birds range out over the surrounding Mixed Desert Shrub Community in search of food.

(e) *Sarcobatus vermiculatus* Community: There is a noticeable distribution of this community along the banks of some of the larger rivers in the central and eastern parts of the Basin. Plate XLIX shows that this community forms a belt between the cottonwoods and the bad-land bluffs of the larger rivers. In this lowland the greasewood flourishes on a compact soil with a high alkali content and a high water table. *Atriplex* sp. is often the important secondary species, but in many cases this community merges into the more extensive *Atriplex-Tetradymia* Community. Few birds nest in the greasewoods; the Sage Thrasher is the most common. The

greater number of avian forms found here are from the surrounding communities and invade the greasewood for food or shelter from wide-ranging predators.

(f) *Atriplex-Tetradymia Community*: This is the major community of the Mixed Desert Shrub. Such developmental communities as the *Chrysothamnus* and *Sarcobatus* (Graham, 1937) merge into it. Other minor communities, such as the Mat *Atriplex* and *Kochia-Hilaria*, which develop under local edaphic conditions, move in the line of succession toward the dominant *Atriplex-Tetradymia Community*. Graham points out that in many places in this community *Artemisia spinescens* ranks as an equally important species. Sheep, by their close grazing of the *Atriplex*, have permitted the spiny *Tetradymia* to become equally abundant, and with continued over-grazing the *Atriplex* may be completely eliminated as a dominant plant of the community. Wherever sandy soil permits the Prairie Dog (*Cynomys leucurus*) to form mounds, the Western Burrowing Owl occupies the vacated burrows to raise its young. These owls are wide-ranging minor influents in the Mixed Desert Shrub Community. They are primarily nocturnal and feed chiefly on the Kangaroo Rat (*Dipodomys ordii*) and the Spade-footed Toad (*Scaphiopus intermontanus*), which are important mammal and reptile components of the community. Over this community the Western Lark Sparrow is a minor avian influent from early vernal to late serotinal periods. Other minor avian forms found here are the Common Rock Wren, Sage Thrasher, and Say Phoebe. The wide ranging minor influent species are the Western Red-tailed Hawk, Prairie Falcon, Turkey Vulture, and Nighthawk.

2. Juniperus-Pinus Community

This community is consistent within its altitudinal limits of 5500 to 7000 feet. The average annual rainfall is twelve inches and the mean annual temperature is 44 degrees F. The dominant plants are the Utah Juniper, *Juniperus utahensis*, and the Pinyon Pine, *Pinus edulis*. The influent avian species is the Pinyon Jay, while the minor influents are the Black-throated Gray Warbler, Mexican House Finch, Gray Titmouse, and Western Mourning Dove.

The lower edge of this community is transitional with the low altitude communities of the Mixed Desert Shrub. At practically all points in the Basin it was noticed that the sagebrush usually follows up dry washes and reaches, in many cases, the *Artemisia-Cercocarpus Community*. At other places the junipers follow narrow ridges that have extensive growths of

Artemisia sp. growing between them. Wherever there is a gravel ridge, the junipers follow closely; while on the more extensive shale or clay, intervening strips of *Atriplex* sp. form the dominant ground cover. This plant invader from the Mixed Desert Shrub is important in the Juniperus-Pinus Community, because it affords an insect-food supply and a dense shrubby growth as protection from predators for the avian components. The Sage Thrasher, White-rumped Shrike, and Western Mockingbird reach the Juniperus-Pinus Community through the Artemisia Community. During the winter the Sage Grouse comes down to low altitudes in the Artemisia Community and so becomes a hiemal resident of the Mixed Desert Shrub.

3. Artemisia-Cercocarpus Community

This rather uniform community occurs at an altitude of 7000 to 8000 feet. Graham (1937, p. 71) states "While *Artemisia* is almost everywhere a conspicuous shrub, it seems to represent a life-form rather than a specific element." As far as present observations are concerned the life-forms of this complex community are more important to the avian components than the specific composition of the dominant plants. The dominant plant, *Artemisia tridentata*, is associated with the sub-dominant shrubs, such as *Amelanchier* sp., *Cercocarpus montanus*, and *Purshia tridentata*. In this community at the south rim of the Basin, *Quercus utahensis* becomes an important sub-dominant. There is considerable variation of the altitudinal limits of this community on the Tavaputs Plateau, where it invades areas up into the firs at 9500 feet. The Sage Hen is an avian influent, depending upon the *Artemisia* for food, shelter, and nesting sites. The wide-ranging minor influents are the Swainson and Red-tailed hawks; the minor influents are the Green-tailed and Spurred towhees, the Vesper and Brewer sparrows, Western Meadowlark, and Brewer Blackbird, all nesting and feeding within the community.

4. An irregular ecotone between the Artemisia and Populus aurea communities

This transition is composed of a series of local edaphic communities. Graham refers to them as the mid-altitude valleys which occur at elevations from 6000 to 8000 feet; they are mesophytic and not extensive. The Douglas Fir, *Pseudotsuga mucronata*, is the dominant tree where the valleys are narrow, and the sides precipitous and rocky. The shrub and herbaceous cover is generally rather luxuriant in spots where the Spurred

Towhee, Green-tailed Towhee, and Broad-tailed Hummingbird are the minor avian influents. Where the valleys are dry and open, with gravelled old glacial floors, the Rocky Mountain Yellow Pine, *Pinus scopulorum*, is the dominant tree. In the openings *Artemisia* invades, and often stands of pine are mixed by scattered aspen groves. The yellow pine is practically non-existent on the Tavaputs Plateau, but in the Uinta Mountains, particularly at Green Lake, large stands of this tree grow.

In this *Pinus scopulorum* Community, the Aves form a large number of influent and minor influent components. A most interesting feature is that this community is invaded by a large number of birds from the higher altitudes, many coming with their young in July and remaining in the community until September. Avian influents are the Western Tanager, Townsend Solitaire, and Natalie Sapsucker. Invading avian influents are the Bent Crossbill, Clark Crow, Cassin Purple Finch, Long-crested Jay, and Northern Pine Siskin. The minor avian influents are the Rocky Mountain Audubon Warbler, Rocky Mountain Hairy Woodpecker, Uinta Nuthatch, Western Warbling Vireo, Western House Wren, Mountain Bluebird, Western Chipping Sparrow, and Western Evening Grosbeak.

In moist valleys of the Uinta Mountains and Tavaputs Plateau, scattered stands of Blue Spruce, *Picea pungens*, are found. At the collecting locality in Indian Canyon there is an extensive growth of Blue Spruce, the dominant tree; it is interspersed with Lodgepole Pine, Douglas Fir, Aspen, and on the open hillsides by the *Artemisia-Cercocarpus* Community. The avian population, consisting principally of minor influent forms from the adjacent communities, is made up of the Gray-headed Junco, Rocky Mountain Pine Grosbeak, Long-crested Jay, Western Warbling Vireo, Rocky Mountain Hairy Woodpecker, Red-naped Sapsucker, Rocky Mountain Chickadee, Western Robin, Western House Wren, Spurred Towhee, Green-tailed Towhee, Western Tanager, and Audubon Hermit Thrush.

5. *Populus-Rosa* Community

This community has a wide transitional infringement into the lodgepole pines and the mixed communities of the transitional valleys. Between altitudes of 8000 and 8700 feet, *Populus aurea* is found in pure stands, often broken by grassy meadows of varying extent. The aspens flourish in a mesophytic environment where the annual rainfall is thirty or more inches, most of which occurs as snow in the winter months. The herbaceous component of the community is very luxuriant and is

comprised of a large number of plant species, of which the following are almost universally associated with the aspens (Graham, 1937): *Juniperus sibirica*, *Aquilegia coerulea*, *Clematis hirsutissima*, *Prunus melanocarpa*, *Rosa chrysocarpa*, *Rosa manca*, *Rosa puberulenta*, *Lupinus parviflorus*, *Geranium Richardsonii*, and *Frasera speciosa*. The number of secondary species listed by Graham (p. 75-76) is very large.

In this community the avian components are few compared to its transitional elements. The avian influents are the Red-naped Sapsucker and Gray Ruffed Grouse; the minor avian influents, the Western House Wren, Western Warbling Vireo, Wright Flycatcher, Western Wood Pewee, and Broad-tailed Hummingbird.

6. Pinus-Vaccinium Community

The lodgepole pines are extensive in the Uinta Mountains between 8700 and 10,000 feet but do not occur on the Tavaputs Plateau (Graham, 1937). In pure stands of this pine, *Pinus Murrayana*, the trees grow so close to each other that there is little herbaceous vegetation; however, in the more open stands considerable numbers of plant species, especially *Vaccinium scoparium*, are found.

Birds are not overly abundant in the forest, but in its developmental stages, running from the creeks and small bog lakes, a number of species nest. The avian influents are the Long-crested Jay and Sharp-shinned Hawk. Both of these forms are wide ranging but confine their nesting activities to this community. The minor avian influents are the Northern Pileolated Warbler, Mountain Lincoln Sparrow, Uinta Nuthatch, Western Tanager, Bent Crossbill, Audubon Hermit Thrush, and Western Chipping Sparrow.

7. Picea-Abies Community

This community is distinct and extensive in the Uinta Mountains from 10,000 to 11,000 feet. The Engelmann Spruce, *Picea Engelmanni*, and the Alpine Fir, *Abies lasiocarpa*, are the two dominant trees; at the upper extremity of their altitudinal range, the alpine fir is the commoner, although here they both have become dwarfed. While the ground cover in the spruce-fir forest proper is not luxuriant, a large number of secondary plants constitute a rank cover in moist open areas in the forest.

The birds of this community are numerous but carry on the greater part of their activities throughout the developmental stages of the forest. The avian influent is the White-crowned Sparrow, which nests on the

ground under the edges of fallen logs, protecting shrubs, or bunches of grass. It feeds principally at the edge of the forest or in the more mesophytic clearings. The Rocky Mountain Jay ranges throughout the community and over its developmental stages. Minor avian influents are the Alpine Three-toed Woodpecker, Olive-sided Flycatcher, Rocky Mountain Pine Grosbeak, Audubon Hermit Thrush, Gray-headed Junco, Rocky Mountain Chickadee, Rocky Mountain Creeper, and Northern Pine Siskin.

Associated with both the Lodgepole Pine and the Spruce-Fir Communities are two developmental communities that Graham calls the "upper altitude lake" and "upper altitude meadow." In the Uinta Mountains there are numerous glacial lakes, some almost devoid of vegetation, others in various successional stages of becoming so choked with vegetation that they are merely wet *Carex* meadows. Still other meadows of a more xerophytic nature are the result of edaphic factors in the community, or are due to wind action, or to other natural agencies. In both communities there is a large number of plant forms. These developmental communities, being immediately adjacent, are of particular interest, because they afford the principal food territories for many of the avian components of the Lodgepole Pine and *Picea-Abies* communities (White-crowned Sparrow, Rocky Mountain Pine Grosbeak, Clark Crow, Long-crested Jay, Western Chipping Sparrow, and Northern Pine Siskin). The meadows have a minor avian influent in the Rocky Mountain Pipit, which nests in the grass or in dry sedges, usually under the protection of a rock or mound, and always close to one of the numerous small lakes or streams of the high meadows. The birds feed on the abundance of invertebrate life found along the margins of lakes or streams.

8. *Sieversia-Carex* Community

This community is above timberline, which starts at about 11,000 feet, and occurs in scattered islands among the lichen-covered rocks. *Sieversia turbinata* with *Carex* sp. dominates where enough soil has accumulated. In these meadows small lakes occur, and it is here that the Rocky Mountain Pipit nests in largest numbers. Above this community, on the sheer rock faces or along bare rock ridges, the Black Leucosticte nests and comes to the meadows and small lakes for food. The Southern White-tailed Ptarmigan nests over these high alpine communities and down to the edges of the dwarf alpine firs. Today this once important avian influent is almost extinct in the Uinta Mountains. The Sharp-shinned Hawk is the only wide-ranging avian influent above timberline.

Under the discussion of communities, the local distribution of the bird population of the Basin is clearly seen to be one of community preference. A great many of these birds exert an important force over a number of communities by their food, shelter, and reproductive coactions. The early autumnal movement before actual migration from the higher altitudes to the lower drainage systems of the Basin, the sudden influx of migrants, and the movement to lower altitudes of alticoline forms emphasize, even more effectively, the importance of the avian population to community phenomena.

DESCRIPTION OF MAJOR COLLECTING LOCALITIES

1. Near Jensen, including a considerable area from the mouth of Ashley Creek; two miles south of Jensen to eight miles north of the Dinosaur National Monument on the west side of Green River. Elevation 4700 ft. Uintah County. Four hundred and nine specimens: May 1-7, 10-24, 26, 28-31; June 1-5, 7-8, 21, 24; July 12; August 9; September 20-30. This area covers a strip along the west side of Green River ten miles long with an average width of two miles. The major collecting locality was at the Ashley Creek marshes, at the mouth of Ashley Creek where it empties into Green River. A large part of this strip is under cultivation and the remainder is used principally for pasture. Here, there is an extensive mixture of communities ranging from the cottonwood floodplain and Scirpus-Typha swamp to the very xerophytic greasewood desert. In the early developmental stages of the floodplains, dense growths of *Salix* sp., *Rosa puberulenta*, and Sour Buffalo Berry, *Lepargyrea argentea*, are the dominants. In the mature floodplains the dominant tree is the Western Cottonwood, *Populus Sargentii*. The Scirpus-Typha swamp has been dammed to form Ashley Lake, a government waterfowl refuge. However, the west and north sides of the lake still remain an extensive Scirpus-Typha swamp. Between the swamp and the greasewood and sagebrush flats, which in many places come to the edge of the swamp by following high ground, there are meadows of salt grass, *Distichlis stricta*. These complex developmental communities afford a great diversity of habitats for various species. The Long-tailed Chat, Western House Wren, and Yellow Warbler nest in the *Salix* and *Rosa* communities; the Red-shafted Flicker, Arkansas Kingbird, and Bullock Oriole, in the mature Cottonwood Community; the American Coot, Long-billed Marsh Wren, Yellow-headed Blackbird, and Red-winged Blackbird, in the Scirpus-Typha Community; the Savannah Sparrow and Western Meadowlark in the *Distichlis stricta*

Community; and the Lark Sparrow, Sage Thrasher, Brewer Sparrow, and Baird Wren nest in the Greasewood-Sagebrush Community. The Green River valley is used as the principal migration lane. The swamp and floodplain at the mouth of Ashley Creek afford an abundance of food and protection for the migrants.

2. Powder Springs, sixteen miles southeast of Jensen and one and one-half miles south of U. S. Highway 40. Elevation 5100 ft. Uintah County. Eighteen specimens: May 6, 8, and 10; June 25; and August 23. Here the country is rolling and greatly cut by washes. It belongs to the Mixed Desert Shrub Community with Shadscale, *Atriplex confertifolia*, the dominant shrub. The lower slopes are sparsely covered by juniper, but on the upper slopes and hilltops to the south and east, there is a well-developed *Juniperus-Pinus* Community. The Pinyon Jay, Mexican House Finch, Western Mourning Dove, and Black-throated Gray Warbler are the common nesting birds of the community.

3. Five miles north of Jensen between the Dinosaur Quarry and the Green River. Elevation 4800 ft. Uintah County. Two specimens: May 6. A Greasewood (*Sarcobatus vermiculatus*) Community.

4. Cottonwood Springs, Little Mountain, eight miles due west of Vernal. Elevation 6600 ft. Uintah County. Thirty-four specimens: May 28, June 14, and June 28. The spring is surrounded by a well-developed stand of large cottonwoods, which make it appear as a cottonwood island in the middle of a *Juniperus-Pinus* Community. This spring is the main watering hole for the birds of the entire mountain slope. The surrounding Pinyon-Juniper forest is the nesting locality of the Black-throated Gray Warbler, Mexican House Finch, and the Mourning Dove.

5. Blue Mountain, twenty-five miles east of Vernal. Elevation 7500-8000 ft. Uintah County, Utah; Moffat County, Colorado. Thirty-two specimens: May 15, May 25, and June 26. This locality is approached from the southeast slope by a road that turns north off U. S. Highway 40, sixteen miles southeast of Jensen. The southeast mountain slope is covered by a well-developed *Juniperus-Pinus* Community to an altitude of 7500 feet. Here the slope breaks off at about 8000 feet into a high, rolling mountain plateau that is dominated by an *Artemisia* Community. Other plants such as *Amelanchier*, *Cercocarpus*, and *Symphoricarpos*, are found, especially along the south-facing slopes and in the shelter of small valleys. The Sage Hen, Green-tailed Towhee, Lark Sparrow, and Sage Thrasher are the abundant nesting species.

6. Along U. S. Highway 40 from Jensen to a point sixteen miles south-

east, where it follows north by east for seven miles, then joins the Blue Mountain trail, which in turn goes due north to the foot of the mountain and winds up the southeast slope to an altitude of 8000 ft. Uintah County, Utah; Moffat County, Colorado. Six specimens: May 25. This route passes through strips of "bad lands" and a Mixed Desert Shrub Community at the foot of the mountain and through a Juniperus-Pinus Community on some of the higher hills. The Burrowing Owl, Lark Sparrow, Desert Horned Lark, and the White-rumped Shrike were frequently seen along the road.

7. Horseshoe Bend, twelve miles south of Vernal. Elevation 5000 ft. Uintah County. Five specimens: June 9 and June 20. This locality is on the west side of Green River, about eight miles from the Ashley Creek marshes along the old Vernal-Dragon road. Here the Atriplex-Tetradymia Community breaks off rapidly to the Green River, where it gives way to a fringe of Western Cottonwood, *Populus Sargentii*, and Sandbar Willow, *Salix exigua*. Such birds as the Bullock Oriole and Flicker frequent the cottonwoods; whereas in the xerophytic Atriplex-Tetradymia Community, the Lark Sparrow, Sage Thrasher, and Meadowlark are numerous.

8. Green Lake, Uinta Mountains, forty miles north of Vernal on the Vernal-Manila road. Elevation 8000 ft. Uintah County. One hundred and fifty-nine specimens: June 10, June 29, July 5, and September 11-15. This locality is just over the crest of the Basin, a little north of the height of land between Carter and Cart creeks, which drain north into the Green River. The community is somewhat complex and transitional. It is a plateau between the Green River Canyon to the north and the crest of the Uinta Mountains on the south. The Yellow Pine is dominant over a greater part of the locality in which we collected, although high altitude sagebrush flats cover extensive areas between the stands of Yellow Pine. In the more mesophytic localities lodgepole pines and aspens dominate. The Spruce-Fir forests of the higher altitudes meet the lodgepole pines at approximately 8500 feet. The Mixed Yellow Pine, Lodgepole, Aspen, and Sub-montane Shrub Community is the nesting locality of a large number of birds, including the Cassin Purple Finch, Pine Siskin, Western Tanager, Uinta Nuthatch, Williamson Sapsucker, and Townsend Solitaire.

9. Fifteen-seventeen miles southwest of Vernal and five miles south of U. S. Highway 40, along the road to Ouray. Uintah County. Thirty-nine specimens: June 12, 23, and July 12. This country is fairly level with rolling hills cut by soil erosion. The desert is composed chiefly of an Atriplex-Tetradymia Community. Burrowing owls nest in the more sandy

portions, while the Say Phoebe and Rock Wren are the more abundant birds.

10. Ashley Canyon, ten miles north of Vernal. Elevation 6000 ft. Uintah County. Ten specimens: June 15 and 22. This locality extends from the junction of Ashley Creek and Dry Fork to a mile above the junction along each side of Ashley Creek. A mature floodplain of large cottonwoods is distributed along the creek bed, but not extensively, for at this point it is cut by a deep gorge. The mesophytic and sheltered condition of the floodplain makes possible a luxuriant shrubby growth of *Rosa puberulenta*, *Rhus trilobata*, *Lepargyrea argentea*, and a dense herbaceous vegetation. Along the banks and in many places for a distance of two hundred feet or more, willows (*Salix lutea* and *Salix* sp.) form an extremely dense shrubby tangle. In this Populus-Salix Community the Spurred Towhee, Macgillivray Warbler, Virginia Warbler, Mountain Bluebird, and the Broad-tailed Hummingbird are the abundant nesting species. Along the swift streams the Dipper is seen frequently.

11. Indian Canyon, twenty miles southwest of Duchesne, and a mile east of the Duchesne-Castlegate road on the east side of the east fork of Indian Creek. Elevation 7500-8000 ft. Thirty-eight specimens: June 17-20. A mixed forest of Blue Spruce, Lodgepole Pine, Aspen, and Alpine Fir make up the mixed community. Deep valleys, well-wooded over their banks and narrow bottoms, make a mesophytic environment. There are several large stands of aspens in which the trees average ten to eighteen inches in diameter just above the bases. The more open slopes are dominated by a Sub-montane Shrub Community. In these dense secondary growths birds are numerous, particularly the Spurred Towhee, Green-tailed Towhee, and Gray-headed Junco. In the dense coniferous and aspen forests the Long-crested Jay, Hairy Woodpecker, Western Robin, Western House Wren, and Western Tanager are abundant.

12. Paradise Park, Uinta Mountains. Elevation 10,000 ft. Uintah County. Fifty-eight specimens: July 7-10. A large reservoir-lake is surrounded by alpine meadows and a Mixed Lodgepole Pine, Picea-Abies Community. From the basin formed by the lake the ground slopes rather abruptly on the east and west sides to rocky ridges, where there are dense stands of spruce and fir, interspersed by numerous small glacial lakes. To the north, the ground steadily rises to an elevation of 10,000 feet to the crest of the Uinta Basin. Birds such as the Rocky Mountain Jay, Rocky Mountain Pine Grosbeak, and the Gray-headed Junco are numerous.

13. Paradise Park, Uinta Mountains. Elevation 8500 ft. Uintah County. Three specimens: July 8. This locality is on the southeast slope of Mosby Mountain along the Paradise Park-Lapoint road. A Mixed Aspen and Sub-montane Shrub Community dominates the slope from 8000 to 8500 feet. The Gray Ruffed Grouse, Spurred Towhee, Green-tailed Towhee, and Broad-tailed Hummingbird nest here in considerable numbers.

14. Bald Mountain, Uinta Mountains, twenty-five miles northeast of Kamas. Elevation 10,000-10,500 ft. Wasatch County. Sixty-three specimens: July 16-20. This locality extends from Mirror Lake, which is surrounded by a lodgepole pine-spruce woods through the upper Alpine Fir-Spruce Community to the extensive alpine meadows at the foot of Bald Mountain. In the Engelmann Spruce-Alpine Fir Community, the White-crowned Sparrow, Gray-headed Junco, Western Chipping Sparrow, and Rocky Mountain Jay are plentiful, nesting throughout the forest. Above timberline the alpine meadows are dotted by numerous small glacial lakes in various successional stages, from lakes nearly free of vegetation to wet meadows that formerly were lakes but now are completely filled in by vegetation. In this community the Rocky Mountain Pipit nests in large numbers; other birds, such as the White-crowned Sparrow, Western Chipping Sparrow, Rock Wren, and Rocky Mountain Jay, frequent these meadows.

15. Four miles east of Kamas on the Kamas-Mirror Lake road that runs along the west side of Beaver Creek. Elevation 6500 ft. Wasatch County. Three specimens: July 21. West of the road there is a very abrupt mountain slope completely covered with a shrubby growth of *Quercus* sp. This cover is so dense that one can hardly walk through it. The Dusky Grouse, Green-tailed Towhee, and Woodhouse Jay are the common birds of the community.

16. On the south bank of the Yampa River, just east of the junction of the Little Snake and Yampa rivers, eight miles north of Elk Springs, Colorado. Elevation 5600 ft. Moffat County, Colorado. Twelve specimens: July 24. At this point the Yampa River is broad and carries a great deal of silt, resulting in sand bars which have been rapidly built up in the middle of the river and along its banks. On several of these mid-stream sand bars *Salix* sp. has been able to invade. A small colony of black terns was seen feeding young here. The plateau just south of the locality is in the bad-land formation and is in an advance stage of gully erosion. Plant growth is extremely sparse, although sagebrush and grease-

wood appear between the river and the plateau. Some abandoned farms of the river "bottoms" are overgrown with weeds, but wherever the natural floodplain exists, it is dominated by a mature stand of cottonwoods and dense secondary growths of *Salix*. In this mature floodplain the Nighthawk, Long-tailed Chickadee, and Arkansas Kingbird are abundant. The Kingbird nests in the cottonwoods. The Nighthawk spends its days in these trees, hunting over the floodplain in early morning and evening, and nesting on the nearby "bad-land" plateaus.

17. Beaver Creek, seven miles northwest of Ladore. Elevation 6000 ft. Moffat County. Seventeen specimens: June 25 and 27. This locality is on the west side of the creek three miles from its junction with the Yampa River. Beaver Creek is a small stream, but with flash floods in the spring and summer it becomes a sizable river, flooding a considerable area for short periods. Cottonwoods dominate the floodplain with an extremely luxuriant shrub and herbaceous growth. The valley through which the creek runs is narrow, but the greater part of it is cultivated land. The rocky slopes of the valley are very abrupt; a mature *Juniperus-Pinus* Community covers them and the promontories of the surrounding locality. In the Floodplain Community the Mountain Song Sparrow, Western Tanager, and Spurred Towhee are numerous, while in the *Juniperus-Pinus* Community the Pinyon Jay and Black-throated Gray Warbler are abundant forms.

18. Ouray, two miles west of the junction of the Green and White rivers. Elevation 4650 ft. Uintah County. Eight specimens: July 28. Along the river there is a well-developed Cottonwood-Floodplain Community, while a Greasewood-Shadscale Community occupies the flats back from the river. In the Floodplain Community numerous large dead cottonwoods afford nesting sites for the Lewis Woodpecker and Arkansas Kingbird.

19. Florence Canyon, seventy-five miles south of Ouray; head of Florence Canyon and along its north rim on the Tavaputs Plateau, which borders the southern rim of the Basin between the heads of Florence and Hill creeks. Elevation averages 8000 ft. over the greater part of the locality. Uintah County. Ten specimens: July 29-30, August 3-5. *Artemisia* forms the dominant plant growth and this, with scattered stands of aspen, oak (*Quercus utahensis* and *Quercus Gambellii*), and *Cercocarpus* make up a complex Sub-montane Shrub Community. The Sage Grouse, Green-tailed Towhee, Bridled Titmouse, and Western Vesper Sparrow are common over the sagebrush plateaus.

20. Hill Creek and immediate vicinity, forty miles south of Ouray on the Wild Brothers Ranch. Elevation 6800 ft. Uintah County. Thirty-one specimens: August 5-7. The river at this point cuts a deep gorge with towering cliffs two hundred to four hundred feet high on either side. The bottoms are from a half-mile to three quarters of a mile wide. On the tops of the high cliffs and part way down the less perpendicular slopes are scattered stands of the *Juniperus-Pinus* Community. In the floodplains a good portion is under cultivation or is used for hay fields. The greater part of the community is dominated by *Salix* sp., that is extremely dense on each bank of the river and in many places reaches to the foot of the cliffs. Scattered stands of cottonwoods dominate small areas of the *Salix* Community. At the base of the cliffs on the higher, more xerophytic ground, greasewood and sagebrush form a Desert Shrub Community that meets the lower extension of the *Juniperus-Pinus* Community. The Thick-billed Red-wing, Spurred Towhee, and Bullock Oriole nest abundantly in the *Salix*-Floodplain Community. At the edge of the floodplain in the Desert Shrub Community, the Sage Thrasher and Canyon Wren are numerous. The Pinyon Jay hunts through the *Juniperus-Pinus* Community in large flocks and invades the entire floodplain.

21. Strawberry Reservoir, twenty-five miles southeast of Heber. Elevation 7500 ft. Wasatch County. Seven specimens: August 17. The large reservoir-lake in the Strawberry River valley is fed principally by the Strawberry River and numerous creeks that drain the immediate surrounding mountain slopes. The Strawberry River has its outlet at the southeast corner of the reservoir, and from here it continues in an easterly direction to join the Red River about ten miles southeast of Fruitland. The Red River forms one of the main tributaries of the Duchesne River. The shores of the reservoir are extensive mud flats, and because of the shallow water line, there is an abundance of food for ducks, geese, shore birds, and other waterfowl. Extensive and comparatively level, the valley is three to six miles wide and runs some twenty-five to thirty miles in a northwest-southeast direction. The valley is covered with big, grassy meadows, sagebrush, and rabbitbrush flats. Along the Strawberry River and numerous creeks are extensive growths of *Salix* sp. and a luxuriant growth of herbaceous plants. This valley is surrounded by ridges and mountains that rise rapidly from 8000 to 9500 feet. From 9000 feet aspens trail down the slopes into the valley to about 7800 feet. At 9000 feet lodgepole pines form a transition between the Aspen and the Lodgepole Pine communities.

In the Basin, the largest number of migratory and nesting ducks as well as shore birds and other waterfowl may be found at Strawberry Reservoir. Sage Hens are numerous in the valley and nest on the sagebrush flats. Other birds, such as the Brewer Sparrow, Green-tailed Towhee, and Marsh Hawk, are plentiful.

22. Moon Lake, forty miles north of Duchesne. Elevation 8500 ft. Duchesne County. Sixteen specimens: August 20-21. This large lake is fed by the West Fork River, which continues out the southeast corner of the lake, and ultimately joins the Lake Fork River, a tributary of the Duchesne River. Moon Lake is approached from the south by a chain of broad-terraced valleys. The lake is surrounded on the east and west by steep mountain slopes which rise abruptly from 8500 to 10,000 feet. This locality is in a transitional community between the aspens and lodgepole pines. At the southwest side of the lake there is an extensive meadow cut by small creeks. The Gray-headed Junco, Pileolated Warbler, and Olive-sided Flycatcher are here abundant.

23. Five miles south of Jensen on the east side of the Green River. Elevation 4700 ft. Eleven specimens: May 22, June 3, 5. Along the bank of the river a margin of *Salix* sp. dominates, but on slightly higher ground a mature cottonwood floodplain exists. At the east edge of the cottonwood floodplain a dense growth of rose briars covers many of the openings. The floodplain gives way on higher ground to greasewood. The Arkansas Kingbird, Bullock Oriole, Nevada Cowbird, and Western House Wren are the common species.

24. Uinta Canyon, twenty miles north of Roosevelt, in the general vicinity of Big Uinta Park, eight miles above the mouth of Pole (Farm) Creek, Uinta Mountains. Elevation 7300 ft. Duchesne County. Thirty specimens: August 28, 29. The valley floor is flat and fairly narrow with high mountainous slopes on each side, running from 7300 to 10,000 ft. This valley belongs to a mixed community referred to by Graham as the Mid-Altitude valley. Along the river banks are dense secondary growths of *Salix* sp. Yellow pines with mixed stands of aspens dominate the higher ground, whereas sagebrush dominates the openings along the canyon. Birds are numerous over the Yellow Pine-Aspen and Willow communities. The Macgillivray Warbler, Mountain Song Sparrow, Uinta Nuthatch, Audubon Warbler, and the Western Robin are plentiful in the Yellow Pine-Aspen Community.

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ANNOTATED LIST OF SPECIES

The sequence of species and the nomenclature in the "Check-List" of the American Ornithologists' Union have been followed, except for such changes and additions that the author believed justifiable. The annotated list contains 217 species and subspecies, which includes one new subspecies, the Uinta Nuthatch, *Sitta carolinensis uintaensis* subsp. nov.

Gavia immer elasson Bishop. LESSER LOON.

Two birds were observed on Green River on May 5. Again on September 28 a loon was heard calling from the Green River, one-half mile south

of the base camp on Ashley Creek, although the bird was never seen. A. C. Lloyd saw a single bird at the same locality on May 19, 1935. Leo Thorne of Vernal has a mounted loon that was killed in the spring of 1920 on the Green River at Jensen. On geographical grounds these are *G. i. elasson*.

Colymbus nigricollis californicus (Heermann). EARED GREBE.

Two specimens: two miles south of Jensen. 121824, ad. ♂: postnuptial molt has just set in; a few white feathers are present on the neck and throat; yellowish brown ear-tufts are still conspicuous. 121825, im. ♂: head still shows signs of downy plumage; faint streaks of white are present. The bird, however, is nearly full grown; the first fall plumage is just appearing.

These grebes were found to be uncommon in the Basin. Two pairs were seen on the marshy lake two miles south of Jensen on May 3. One pair was seen on June 16, fifteen miles east of Duchesne in a large marsh that lies just south of the main highway. The two birds were together when collected on August 9; this circumstance established a breeding record for the Basin. On August 17 two pairs with five young were seen swimming in the mouth of a small creek which empties into Strawberry Reservoir.

Aechmophorus occidentalis (Lawrence). WESTERN GREBE.

One specimen: two miles south of Jensen. This grebe was observed only as a migrant. Five birds were seen in Ashley Creek lake on May 4, 5, and 6. During these three days their characteristic call, "*kreek, kreek*," could be heard in the evening. Again, on September 3, two birds were seen at Strawberry Reservoir. A. C. Lloyd found this bird to be rare in 1934 and 1935. He collected one specimen, a female, on May 21, 1935.

Podilymbus podiceps podiceps (Linnaeus). PIED-BILLED GREBE.

One specimen: two miles south of Jensen. The Pied-billed Grebe is rare in the Basin. It appears only as a migrant in the spring and early fall. The only collected specimen for the Basin was taken by A. C. Lloyd on May 24, 1935. Lloyd reports that the bird was in an emaciated condition when collected at Ashley Creek marshes. A pair was observed by the author at the south end of Strawberry Reservoir on August 17, 1937.

***Pelecanus erythrorhynchos* Gmelin. WHITE PELICAN.**

This is a rare visitor to the Uinta Basin. A single pelican was seen one-half mile below Jensen on May 12. Residents of the Basin say that they see one or two birds on the Green River almost every year. There is a large colony of these pelicans at Great Salt Lake, which may account for the occasional stragglers in the Basin during migration.

***Phalacrocorax auritus auritus* (Lesson). DOUBLE-CRESTED CORMORANT.**

This species was rare in the Basin, although a flock of four was seen flying down Green River near the mouth of Ashley Creek on May 14. A. C. Lloyd saw three near this point on May 15, 1935.

***Ardea herodias treganzai* Court. TREGANZA HERON.**

Two specimens: two miles south of Jensen. These adult specimens measure (in mm.); male: wing, 463; tail, 181.8; culmen, 133; depth of bill, 26; tarsus, 150; middle toe, 99. Female: wing, 478; tail, 171.5; culmen, 138.5; depth of bill, 26; tarsus, 165; middle toe, 101.5.

This heron nested commonly at the mouth of Ashley Creek, where it empties into Green River. The creek spreads out into several branches that become choked, forming rather extensive marshes or swamp land. Here a *Scirpus-Typha* swamp has developed, which is rare in the Basin (Graham, 1937). Over other portions of this extensive floodplain are found solid stands of cottonwood, *Populus Sargentii*. The herons here find suitable nesting sites and an abundance of food, such as small fish, frogs, etc. Birds were observed at several localities throughout the Basin: namely, Ashley Canyon, six miles north of Vernal on June 15; Brush Creek, twelve miles north of Vernal, June 29; Strawberry Reservoir, July 14; Yampa River, eight miles north of Elk Springs, Colorado, July 24; Hill Creek, forty miles south of Ouray, August 5, 6, and 7; Strawberry Reservoir, very numerous (thirty individuals), August 17. Each day from September 20 to 30, from twenty-five to thirty birds were seen feeding over the marsh two miles south of Jensen.

***Casmerodius albus egretta* (Gmelin). AMERICAN EGRET.**

Three birds were seen in a flock of fifteen snowy egrets on May 3 at the Ashley Creek marshes. They were seen again on May 5 with a flock of six snowy egrets, but after that date no birds were observed.

***Egretta thula thula* (Molina). SNOWY EGRET.**

Three specimens: near Jensen. At the mouth of Ashley Creek snowy egrets were found to be very common from May 3 until the end of the month. At that time flocks of from ten to twenty birds frequently were seen flying about the marsh or quietly feeding along some of the river banks. At least three pairs remained in the Ashley Creek marshes throughout the summer; but because of the flooded condition of the southwest end of the marshes it was not until late July that two nests were discovered. It was apparent that the nests had been used earlier in the season, for young in immature plumage were seen later with the adults. A. C. Lloyd saw birds in immature plumage in late August, 1935.

Three birds were seen on June 16 on the Duchesne River, seven miles west of Myton, and four at Strawberry Reservoir on July 14. While at the Ashley Creek marshes, September 20, twelve birds were seen flying about and feeding in the shallows of the marsh. By September 25 they had disappeared, and none was seen after that date.

***Nycticorax nycticorax hoactli* (Gmelin). BLACK-CROWNED NIGHT HERON.**

Three specimens: near Jensen. A small colony of ten or twelve pairs of these birds nested in Ashley Creek marshes. Their nests were from ten to fifteen feet above the water level in the great tangle of willows and cottonwoods. At dusk they were a noisy lot—flying out of the marsh, circling high above the camp, and uttering their raucous “quawk.” Throughout May and June this was a nightly performance and was repeated again in late August and September, when the young birds joined in the chorus. For the most part the herons fed in the shallows of the dense *Scirpus-Typha* swamp, and upon occasion single birds would fly from the shallows of the creek at points where the dense foliage nearly formed a canopy over the water. The colony left the marsh about the 28th of September, and by the 30th, not a bird could be found. A. C. Lloyd saw several birds in late May, 1935.

***Botaurus lentiginosus* (Montagu). AMERICAN BITTERN.**

One specimen: two miles south of Jensen. This bird was not common in the Basin, although two pairs nested in the Ashley Creek marshes. One of the adults was seen whenever the marshes were visited. The birds were wary and flew up long before a close approach could be made. Often in

the quiet evenings their characteristic calls came booming out of the depths of the dense growth of rushes, or the birds were seen flying low across the marshes to new feeding places. The bitterns were present from May 1 until September 30. The only other localities in which bitterns were observed were at eight miles west of Myton on the Duchesne River, June 16, and at Strawberry Reservoir, August 17.

***Plegadis guarauna* (Linnaeus). WHITE-FACED GLOSSY IBIS.**

Four specimens: near Jensen. Flocks of from twenty-five to fifty ibis were seen feeding in irrigated fields in the vicinity of Jensen from May 1 to June 2. Farmers of the district called them "angleworm birds" because they concentrated in freshly irrigated fields in the spring, wading about in the shallow water and picking up earthworms and various larvæ.

These large, dark reddish birds were common during the spring and for a short time gave evidence that they might nest in Ashley Creek marshes, although they did not do so. They had a well-regulated daily routine. They could be found in the marsh until 10:00 o'clock every morning. Then they flew into the air, circling high in the sky for half an hour or more, and finally the whole group wheeled off toward newly irrigated fields. There they continued feeding or resting until late afternoon. At dusk the birds could be seen flying slowly back to the protection of the *Scirpus-Typha* swamp of Ashley Creek. After June 2 the birds suddenly disappeared. They were not seen again until August 25, when a small group of eight was encountered on the Green River just south of Jensen. Although the writer spent the latter half of September in the vicinity of the Ashley Creek marshes, the birds were not observed again. These birds are apparently new arrivals in the Uinta Basin, appearing with the development of irrigation. The residents of the Basin showed considerable interest in these large wading birds. LeRoy Kay recalls that the first time he saw them was in May, 1927, when two fed at the edge of a grassy slough, one mile north of Leota Ranch.

***Branta canadensis canadensis* (Linnaeus). COMMON CANADA GOOSE.**

Four specimens: two miles south of Jensen.

No.	Date	Tarsus	Culmen	Depth of Bill	Wing	Middle Toe and Claw
122073 ♂	Sept. 27	88	55	26	505	99.5
122076 ♂	" 28	88.5	52	26.1	501	100.5
122075 ♀	" 28	80	49.9	24	453	90.5
122074 ♂	" 27	79.9	49.8	25.9	470	97

On May 3 several large flocks of Canada geese were seen traveling northwest, flying high overhead, and following the general course of the Green River valley. Apparently these birds were migrants, for they were not seen again. However, a small flock of twenty geese fed along the sand bars of the Green River, just north of Jensen. Reports of farmers of the district that the birds nested in the Green River canyon were verified by Henry Millacum, reliable local resident of Vernal, who passed down the gorge in a specially constructed rowboat. He observed several pairs of Canada geese with good-sized young in late July, 1936.

The first small flock of eight geese came out of the canyon and began to feed in the Ashley Creek marshes on September 15. By September 20 it was not unusual to be awakened at daylight by the honking of two or three hundred geese flying out of the marsh lake and from the sand bars of the Green River into a grain field one mile south of my base camp. Flocks of from fifteen to thirty geese could be seen flying along the river throughout the day, or resting quietly out on the sand bars and the mud flats of the Ashley marsh lake.

A trip was made out to the grain field before daylight on the morning of September 27, and shallow pits were dug. At 5:30 A.M., with the first streaks of light in the east, a flock of twenty-five geese slipped quietly into the field from the southwest and dropped to the ground not more than twenty yards behind me. Then, from the direction of the marsh lake, came the clamor of geese. Twelve flocks of geese, averaging from eight to thirty individuals, arrived at five to ten-minute intervals. Before the main concentration had assembled, two birds were collected. The geese continued feeding until 10:00 A.M. En masse they returned to the marshes. The next morning, September 28, two more birds were collected. The geese made daily morning visits to the field until September 30; but with the opening of the duck season, the flocks soon dispersed to safer feeding grounds.

Fifty geese were observed on August 17 resting on a large mud flat on the west side of Strawberry Reservoir. From reports of the state game warden, Lee Kay, numbers of Canada geese are commonly seen at the reservoir in the spring and fall migrations. LeRoy Kay says that from 1915 to 1918 one or two pairs of geese nested on a sand bar of the Green River, just below the Dinosaur Monument. In 1919, a heavy flood covered the bar with driftwood so that no birds nested there in 1920. One nested on the bar in 1921, but no geese nested while Mr. Kay worked there in 1922 and 1923. However, these birds always nest in the Green

River canyon that swings to the east and north of the Dinosaur Monument. Mr. Kay saw two adults with six young swimming in Green River a short distance above Leota Ranch, which is about six or eight miles north and east of Ouray.

***Anas platyrhynchos platyrhynchos* Linnaeus. COMMON MALLARD.**

This was the common nesting duck of the creeks, rivers, and lakes of the Basin and up to 6000 feet in the mountains. Mallards were found in considerable numbers about the Ashley Creek marshes.

***Chaulelasmus streperus* (Linnaeus). GADWALL.**

Two specimens: two miles south of Jensen. This species was fairly common at the Ashley Creek marshes and also at Strawberry Reservoir. Six or eight pairs were seen in the vicinity of the marshes throughout the summer. A female and eight partly grown young were located out in the lake on July 12. Later in the fall, from September 21 until the end of the month, from thirty to forty birds could be seen at any time on the lake. At Strawberry Reservoir on July 14, two birds were seen; six on August 10; fifteen, August 17; ten, September 2; and four on October 3.

***Mareca americana* (Gmelin). BALDPATE.**

One specimen: two miles south of Jensen. The Baldpate was not common in the Basin, although at least two pairs nested in the Ashley Creek marshes. One female and a family of seven young were seen on July 12. During May one or two pairs were seen feeding on the open, grassy sloughs almost every day. A large number of this species suddenly appeared after September 23, and they could be seen frequently in flocks of from six to fifteen birds. At Strawberry Reservoir four were seen on July 14; one, August 10; three, August 17; eight, September 2; and twenty on October 3. A. C. Lloyd reports that the Baldpate was rare at the marshes in the spring of 1935.

***Dafila acuta tzitzihoa* (Vieillot). AMERICAN PINTAIL.**

Two specimens: two miles south of Jensen. The American Pintail was a common nesting duck along the Green River valley and occurred in considerable numbers in the vicinity of the Ashley Creek marshes. By early July females with broods of young could be seen at numerous places in the marsh lake. The pintails with the mallards were the first to arrive in early May. The characteristic black and white marking on the necks of the males made them very conspicuous in the irrigated fields or out in the

marshes. In September there was evidence of a concentration of pintails; flocks of from twenty-five to forty birds were seen frequently. Local sportsmen report that this species is one of the last ducks to leave for the south, departing just before the freeze-up.

Pintails were seen in the following numbers at the listed localities: Strawberry Reservoir, July 14, thirty adults and two families of half-grown young; August 10, thirty-five birds; August 17, eight birds; September 2, fifty birds; October 3, twenty birds. At Ashley Canyon, ten miles north of Vernal, on June 15, two birds. At Moon Lake, altitude 9500, forty miles north of Duchesne, on August 20, six birds; and at Green Lake, Uinta Mountains, altitude 8000 feet, on September 11, two birds.

***Nettion carolinense* (Gmelin). GREEN-WINGED TEAL.**

This teal is common in the Basin, and during May, pairs were seen frequently in the sloughs and small lakes that form the Ashley Creek marshes. A female with five half-grown young was observed in Ashley Marsh lake on July 12. In late September, small flocks of between six and fifteen birds were seen very often in the creeks and flooded bayous of Green River.

***Querquedula discors* (Linnaeus). BLUE-WINGED TEAL.**

One specimen: two miles south of Jensen. In May these birds were seen in pairs nearly everywhere in the vicinity of the Ashley Creek marshes and the Green River. Families with six or eight young were observed on June 24 at the mouth of Ashley Creek. In late August, and throughout September, this species was very common along the Green River, at Strawberry Reservoir, and on the Provo River, five miles south of Heber.

***Querquedula cyanoptera* (Vieillot). CINNAMON TEAL.**

Five specimens: near Jensen. 121129, ♂, May 11: plumage on lower breast and belly badly worn and new plumage beginning to appear. The remainder were all full-plumaged males.

Although this was not the most common duck in the Basin, it was the most conspicuous. During May each small slough or lake harbored a pair of these bright-colored ducks. Two males and one female often were seen together, but after the first of June, they were scattered about in pairs and had begun to nest. One nest was located on the northeast corner of Ashley Creek lake. There, forty yards back from the water, the bird had constructed its nest in a small depression in the tall grass. A few

feathers lined the nest, where eight eggs had been deposited. The female sat very close and refused to leave her half-incubated eggs until I approached within ten feet of the nest. Then the bird went flapping off the nest in an attempt to distract attention. After this period, through June and part of July, the teal just seemed to vanish. Immature birds were seen flying by the end of July, and were seen frequently in groups of between four and ten in the small pools and creeks of the marshes until the end of September. Cinnamon teal were observed at Strawberry Reservoir on August 17, September 2, and October 3.

***Spatula clypeata* (Linnaeus).** SHOVELLER.

Three specimens: two miles south of Jensen. This duck was a common migrant; two or three pairs always were to be seen feeding in the shallow ponds of Ashley Creek marshes during May. Again, in September, they reappeared in flocks of from five to twenty individuals. The hunters of the region state that these ducks remain into October, disappearing just before the freeze-up. A few scattered individuals were seen at Strawberry Reservoir on August 14.

***Nyroca americana* (Eyton).** REDHEAD.

Three specimens: two miles south of Jensen. Flocks of between three and ten birds frequently were seen as they stopped in the Ashley marshes during the May migration. In September two flocks of fifteen and twenty, respectively, were seen out in the marsh lake. A. C. Lloyd noticed numerous pairs at the marshes in the spring of 1935.

***Nyroca valisineria* (Wilson).** CANVAS-BACK.

One flock of six birds was observed on Ashley Creek lake on May 14. No others were seen throughout my entire stay in the Basin.

***Nyroca affinis* (Eyton).** LESSER SCAUP DUCK.

One specimen: two miles south of Jensen. This specimen was collected by A. C. Lloyd, who observed several of these ducks in the marshes during the early spring of 1935. Between May 2 and 17, 1937, small flocks of from five or ten scaups were seen on the marshes or along Green River.

***Glaucionetta clangula americana* (Bonaparte).** AMERICAN GOLDEN-EYE.

This species was common in the spring and fall migrations. During May flocks of from three to seven frequently were seen along Green River

in the vicinity of Jensen or the Ashley Creek marshes. Likewise, in September, it was not unusual to see a flock of between twenty and forty golden-eyes as they flew along the Green River. A small flock of eight birds was seen at Strawberry Reservoir on August 17, and again on September 3, several were seen at the north end of the reservoir.

***Charitonetta albeola* (Linnaeus). BUFFLE-HEAD.**

Three specimens: two miles south of Jensen. A. C. Lloyd collected the three specimens on May 9 and 21, 1935, but considered this duck to be a rare migrant. In 1937 a pair was seen at Ashley Creek marshes on May 5. From then until the end of the month one or two birds were encountered at the marshes or along Green River each day. Although none was observed as late as September, 1937, the hunters of the vicinity said that a number are killed each year in October.

***Erismatura jamaicensis rubida* (Wilson). RUDDY DUCK.**

Two specimens: ten miles northeast of Vernal; near Jensen. This duck was not common in the Basin, although a few were observed at the following localities: ten miles northeast of Vernal, May 8; twelve miles east of Vernal, May 13; Green Lake, Uinta Mountains, altitude 8000 feet, three males, September 14. During the latter part of September one or two individuals were seen on Ashley Creek lake and along Green River. A. C. Lloyd saw a flock of four at the Ashley Creek marshes on May 16, 1935.

***Mergus merganser americanus* Cassin. AMERICAN MERGANSER.**

A flock of fifteen birds was observed flying along the west shore of Strawberry Reservoir on September 10, but none was collected.

***Mergus serrator* Linnaeus. RED-BREASTED MERGANSER.**

These birds frequented Green River during migration in early May and late September. Nearly every day during these periods from one to five individuals could be seen feeding in the river or on Ashley Creek lake.

***Cathartes aura teter* Friedmann. TURKEY VULTURE.**

Turkey vultures were numerous along Green River in the vicinity of Jensen, where forty or fifty birds often were seen feeding on a carcass. The birds were seen at nearly every point in the Basin, particularly near the immediate vicinity of cattle and sheep ranches. The vultures seemed to prefer the more arid ranch and farm areas. They also spent much of

their time flying along the river courses and up and down the deep canyons. Even at 8000 feet on Blue Mountain they were observed to be very common; and along the Green River at daybreak, it was not unusual to see an occasional group of ten or fifteen turkey vultures sitting in a dead cottonwood tree, their wings outspread to catch the first warm rays of the sun. A nest of the vulture was found on June 3 at a point four miles south of Jensen on the east side of the river. The nest was nothing more than a rocky ledge fifty feet up on the perpendicular wall of a cliff sixty feet high. In the nest two eggs were just hatching. Upon returning to the nest on June 5, I found that some small boys from a nearby ranch had dropped stones on the young and had knocked them off the ledge, killing them. Ranchers report that the birds nest in the cliffs along Hill Creek, Uinta Canyon, Antelope Canyon, the upper part of Ashley Canyon, and at many other points in the Basin. According to A. C. Lloyd, a few vultures were seen about the marsh during the spring and summer, and large numbers after August 20 in 1934 and 1935.

Astur atricapillus striatulus Ridgway. WESTERN GOSHAWK.

Although the goshawk is not a common bird in the Basin, it was noted to range from the Aspen Community to timberline. Single individuals were observed at Green Lake on June 10 and September 11, and at Paradise Park on July 9. Neither ruffed nor dusky grouse were plentiful in 1937, and this may have been responsible for the scarcity of this species.

Accipiter velox velox (Wilson). SHARP-SHINNED HAWK.

Two specimens: Uinta Canyon, twenty miles north of Roosevelt; and two miles south of Jensen. Sharp-shinned hawks choose suitable nesting sites in the forests of Rocky Mountain Yellow Pine (*Pinus scopulorum*) and Lodgepole Pine (*Pinus murrayana*). During early May they were seen hunting along the edge of dense willows of the Green River and the Ashley Creek swamp. On June 10 at Green Lake, Uinta Mountains, four birds were seen. From their actions they appeared to be either nesting or in the process of building. While I was at Green Lake from June 29 to July 5, hunting birds were seen as they passed quickly through the forest but no nests were found. During September the birds passed along the Green River valley in considerable numbers, becoming most numerous at the height of the sparrow migration in late September. Scattered individuals, usually only one and never more than two, were seen at Blue Mountain, altitude 8000 feet on May 22; Indian Canyon, twenty miles

southwest of Duchesne, June 18; Ashley Canyon, twelve miles north of Vernal, June 22; Paradise Park, Uinta Mountains, altitude 10,050 feet, July 7, 9, and 10; Bald Mountain, twenty-five miles northeast of Kamas, Wasatch County, altitude 10,500 feet, July 16; Beaver Creek, seven miles northwest of Ladore, Moffat County, Colorado, July 25; Hill Creek, forty miles south of Ouray, August 5; Strawberry Reservoir, August 17; and Uinta Canyon, twenty miles north of Roosevelt on August 28.

***Accipiter cooperi* (Bonaparte). COOPER HAWK.**

One specimen: Green Lake, Uinta Mountains. The Cooper Hawk was not abundant in the Uinta Basin even during migration. At the Ashley Creek marshes an occasional bird was to be seen throughout May and particularly at periods when a migration wave of other birds was under way. A single male was taken at Green Lake, Uinta Mountains, altitude 8000 feet. On later trips to this vicinity, June 29 to July 5, and September 11 to 15, pairs of hawks were seen on several occasions, indicating that the birds were nesting not far away. While driving to Green Lake on June 29, I recorded a pair in the Brush Creek valley at a point where the Vernal-Manila road crossed Brush Creek. Later in September a small migration of the Cooper Hawk was observed along the Green River valley between the Dinosaur Quarry and the junction of Ashley Creek and Green River. One or two birds could always be seen hunting along the cottonwoods and willows of the floodplain. There was never any indication of a concentration but it was evident that the hawks were following the migration waves of the smaller Passerine birds.

***Buteo borealis calurus* Cassin. WESTERN RED-TAILED HAWK.**

Five specimens: (a). Strawberry Reservoir; (b). five miles south of Heber; (c). two miles south of Jensen.

	No.		Date	Wing	Tail	Tarsus	Culmen
Light phase							
(a).	121864	♂	Aug. 17	392	246	83	25
	121866	♂	Aug. 17	390	250	80	24
	121865	♀	Aug. 17	387	248.5	86.5	24
(b).	121962	♀	Sept. 9	411	261	86	26
Dark phase							
(c).	122072	♀	Sept. 27	415	250	79	26

The telephone poles between Vernal and Jensen were the favorite perches for fairly large numbers of migrating and resident hawks. Most numerous

was the light phase of *calurus* and only occasionally were melanistic individuals seen. Of five birds collected, specimen 122072, a female, is a dark bird but the remaining four specimens are of the light phase. On several occasions birds of the light-breasted *fuertesi* and light *calurus* types were seen circling together in the Strawberry Reservoir territory, and on August 17 a large concentration of hawks was noted. A continuous stream of red-tailed hawks could be seen wheeling about over the high ridges. Traveling a quarter- to a half-mile apart, they were hunting for ground squirrels, which at that time were dying in large numbers from a disease that was thought to be the sylvatic plague. Later on, in October, while passing through Strawberry Reservoir to Provo, we saw large numbers of red-tailed hawks periodically dotting the roadside posts. About ninety percent of these were of the typical light *calurus* phase, and the remainder melanistic or very rufous individuals of *calurus*.

Birds were noted during June and July at the following localities: Green Lake, Uinta Mountains, altitude 8000 feet, four miles south of Jensen; Indian Canyon, twenty miles southeast of Duchesne; Ashley Canyon, twelve miles north of Vernal; Blue Mountain, east slope, altitude 8000 feet, twenty-five miles east of Vernal; Paradise Park, Uinta Mountains, altitude 10,050; Bald Mountain, altitude 10,500 feet, twenty-five miles northeast of Kamas; Yampa River, eight miles north of Elk Springs, Colorado; Hill Creek, forty miles south of Ouray; Uinta Canyon, twenty miles north of Roosevelt; and Moon Lake, altitude 9500 feet, forty miles north of Duchesne.

***Buteo borealis fuertesi* Sutton and Van Tyne. FUERTES RED-TAILED HAWK.**

Three specimens: (a). ten miles north of Vernal; (b). Blue Mountain; (c). nine miles east of Vernal.

	No.		Date	Wing	Tail	Tarsus	Culmen
Utah: Uinta Basin							
(a).	121376	♂	June 10	407	233	82	25
(b).	121511	♂	June 26	422	224.9	86	27
(c).	121252	♀	May 25	442	254	86	25.1
Texas: Marathon (a); Hot Springs (b). Collected by G. M. Sutton							
(a).	113883	♂	May 6, '33	395	212	79	26
(a).	113842	♂	May 4, '33	396	211	80.5	25.5
(a).	114049	♂	May 23, '33	398	212	77	27
(b).	114017	♂	May 18, '33	398	209	80	27

The three Uinta Basin birds were evidently breeding, for they had been seen on repeated occasions in the same localities. Two of the birds, 121376 and 121511, showed the characteristic lighter underparts, and the streaking of the lower breast and flanks was greatly reduced. The backs of both specimens were lighter on the whole than examples of *fuertesi* examined. The third bird, 121252, was darker. The throat, upper breast, and belly, were very rufous. There was a band of brown blotches on the lower breast; the belly and flags were barred with darker rufous. The upperparts were dark brown with considerable light tan and rufous; the tail, dark reddish with a faint black bar near end; and the tip of the tail had a light terminal band, somewhat worn.

Examination of the above table shows that the wings and tails of the Uinta Basin birds are a little longer than those of the Texas specimens. The lighter color of the backs of the Uinta Basin birds and the larger wings and tails would indicate an intermediate or a gradation between *fuertesi* and the light phase of *calurus*. Thus *fuertesi* and the light phase of *calurus* were nesting in the same locality. The region in question offers an excellent location for further study of these interesting races.

Several times while traveling between Vernal and Jensen during August and September I saw light-colored red-tailed hawks. But in nearly every case, these desirable individuals were able to keep their distance. Several light-breasted red-tailed hawks were seen along the road at Strawberry Reservoir on August 10.

Buteo swainsoni Bonaparte. SWAINSON HAWK.

One specimen: twelve miles northwest of Strawberry Reservoir. Not in fully adult plumage: under parts very dark; breast, dark brown; belly and flags, rich reddish brown.

This large hawk was not overly abundant in the Uinta Basin, although numbers were seen between Strawberry Reservoir and Heber in August. At Hill Creek, forty miles south of Ouray, several were observed between July 28 and August 7. Ranchers informed me that the birds frequently nest almost to the head of the canyons at the lower end of Hill Creek and in the more arid country about and south of Ouray. Single birds or pairs were noted at Indian Canyon twenty miles southwest of Duchesne; Cottonwood Springs, nine miles west of Vernal; on the Vernal-Lapoint road, near Lapoint; twenty miles southeast of Jensen; and between Fort Duchesne and Myton.

Ridgway (1877) states: "In Parley's Park, on the Wahsatch Mountains,

Swainson's Hawk was common, and many nests were found among the scrub-oaks on the slopes or on small aspens on the sides of the ravines. Their position was always low down, often merely a few feet from the ground, and easily reached without climbing. In one of these nests, found July 2d, was a single young one, which, although yet covered with snow-white cottony down, was savagely tearing at a dead weasel which had been carried to the nest by the old birds. . . . The food of this Hawk is by no means confined to small mammals and birds, but during the flights of the grasshoppers, which so often devastate the fields of Utah and other portions of the West, they keep continually gorged on these insects; and at one season we found them living chiefly on the large cricket so common in the Salt Lake Valley."

***Buteo regalis* (Gray). FERRUGINOUS ROUGH-LEG.**

One specimen: two miles northwest of Strawberry Reservoir. Breast and flags, cream tan, lightly mottled with brown; belly white; back, head, and wing-coverts, show considerable rufous with some white; tail faintly barred with a little rufous; terminal base, nearly gray.

The Ferruginous Rough-leg occurred in the Basin only during migrations. At Ashley Creek marshes a number of these hawks were seen flying up Green River and traveling nearly due north. The birds, flying a half to a mile apart, were wheeling about over the east bank of the river as they passed along. On May 5, when this migration was noticed, forty birds passed during a two-hour period. The following day five more were seen passing along precisely the same route. On August 17, at Strawberry Reservoir, five rough-legs were seen hunting over the large sage-brush flats on the west shore of the lake. On one occasion, just like a bullet, a rough-leg dropped out of the sky and pursued for some distance a sage hen from a large flock that suddenly flew up. This did not seem to be in the manner of a direct attack but rather a playful performance. The big hawk swept over the fleeing sage hen, making it redouble its speed, but other than this no attempt was made to strike the grouse. While driving through Strawberry Reservoir on October 4 several Ferruginous rough-legs were seen along the road, flying or resting on nearby dead trees.

***Aquila chrysaetos canadensis* (Linnaeus). GOLDEN EAGLE.**

This large majestic bird is surprisingly common throughout the Basin, despite the reprehensible campaigns that are often promoted by ranchers and farmers to destroy them. Fortunately the big birds spend the greater

part of their time in the less accessible parts of the high surrounding mountains. Pairs of birds that were seen consistently at certain localities during the spring and early summer were considered to be nesting individuals. Only two nests were observed. One was located, high in a crevice of a cliff that dropped off for a sheer thousand feet on the southwest slope of Blue Mountain, on June 26; the other was found on May 25 on a towering cliff one-fourth mile northwest of Dripping Rock Creek. At this second locality the birds were just finishing the construction of the nest. Large dead branches of sagebrush were scattered about the base of the cliff. It was impossible in either case to look into the nests, for they were placed well back into large crevices in the face of the cliff. The first nest probably contained young, because both adults kept flying overhead, screaming as long as anyone was near the vicinity of the nest.

Pairs were seen at the following localities: south entrance of the Green River Canyon; Green Lake, Uinta Mountains; Cottonwood Springs, nine miles west of Vernal; Ashley Canyon, twenty miles southwest of Duchesne; Paradise Park, Uinta Mountains, altitude 10,050 feet; Bald Mountains, twenty-five miles northeast of Kamas, Wasatch County, altitude 10,500 feet; Beaver Creek, seven miles northwest of Ladore, Moffat County, Colorado, 6000 feet; Hill Creek, forty miles south of Ouray; Florence Canyon, seventy-five miles south of Ouray; Strawberry Reservoir, Moon Lake, forty miles north of Duchesne, altitude 9500 feet; Uinta Canyon, twenty miles north of Roosevelt; and at Ashley Creek marshes, two miles south of Jensen. A. C. Lloyd frequently saw golden eagles flying about over the Ashley Creek marshes during the spring and summer of 1935.

***Circus hudsonius* (Linnaeus). MARSH HAWK.**

This species was comparatively common in the Ashley Creek marshes and along the Green River valley. Two pairs nested in the marshes and were seen whenever the locality was visited between May and September. These hawks were found to be numerous at Strawberry Reservoir; and although they nested there, the large numbers that were seen in August and September probably included numerous migrants. A few individuals were seen at Yampa River, eight miles north of Elk Springs, Colorado, on July 24; Beaver Creek, seven miles northwest of Ladore, Moffat County, Colorado, on July 25, 26, 27; Ouray on July 28; Hill Creek, forty miles south of Ouray, on August 5; and Duchesne River, ten miles northwest of Ouray, on August 8. A. C. Lloyd found two nests in the marshes in 1935.

Pandion haliaetus carolinensis (Gmelin). OSPREY.

The Osprey was not widely distributed in the Uinta Basin. A single bird was observed in the vicinity of the Ashley Creek marshes during the early part of May. The next record of the Osprey was at Mirror Lake, Bald Mountain, altitude 10,500 feet, twenty-five miles northeast of Kamas, Wasatch County, between July 16 and 20. A pair had a nest at the north end of the lake in the top of a tall dead Engelmann spruce (*Picea Engelmanni*). The birds were feeding their young at the time. They could be seen resting on tall trees that overhung the lake shore, or flying out over the lake and suddenly plunging down to emerge with a good-sized fish clutched in their talons. They were unwelcome visitors about the well-stocked trout streams and lakes of the Basin, which might possibly account for their small numbers. A. C. Lloyd saw two on May 15 and one on May 19, 1935, at the marshes.

Falco mexicanus Schlegel. PRAIRIE FALCON.

One specimen: five miles south of Jensen. This species is comparatively numerous in the "bad-land" sections of the Basin, particularly between Jensen and Bonanza. The one specimen collected was a female taken from her nest, which contained two eggs. The nest was located by watching for white streaks on the face of the cliffs. Although there were many evidences of old nests, this one nest, five miles south of Jensen and three-fourths of a mile east of the Green River, was the only one that was occupied. Located on a deep rocky shelf extending for some distance back into the face of the cliff, it was in an almost inaccessible place, for the upper face of the cliff overhung the nest shelf by four or five feet. Since there was a drop of fifty feet from the nest to the base of the cliff, the nest was safe from prowling predators. Later in September several individuals were seen a short distance both below and above Jensen along Green River, and at Strawberry Reservoir.

Falco peregrinus anatum Bonaparte. DUCK HAWK.

Two specimens: twelve miles east of Vernal, and two miles south of Jensen. 121144, ♂: adult plumage beginning to show on breast, belly, head, back, and rump. 122031, ♀: adult in full plumage.

This large falcon was common in May and early June at the Ashley Creek marshes. In the evening, just at dusk, one or more of these birds would fly swiftly over camp, much to the alarm of the black-crowned

night herons that were preparing for their twilight flight. The presence of the falcons could always be detected a minute or so before their arrival, for the red-winged blackbirds would whistle a shrill warning. If there happened to be a crow in the neighborhood, his low, guttural growl would confirm the warning.

The hunting birds always came from the southeast, the direction of the bad-land cliffs east of Green River. There, one inaccessible nest was located about forty feet up the deep shelf of a cliff. The actions of the pair indicated young in the nest. Immature birds were noticed about the marsh early in August. There was always one, or more, of these birds in the general vicinity of Jensen from August until the end of September. Others were seen at Hill Creek, forty miles south of Ouray, on August 5, and at Strawberry Reservoir on August 17. A. C. Lloyd collected three males at Ashley Creek marshes respectively on April 23, August 5, and August 23, 1935.

Falco columbarius richardsoni Ridgway. RICHARDSON PIGEON HAWK.

These small falcons were in the Basin only during migrations. In May, and again in September, a few individuals were seen along the Green River near Jensen, and also at Strawberry Reservoir.

Falco sparverius sparverius Linnaeus. EASTERN SPARROW HAWK.

Nine specimens: two miles south of Jensen; near Jensen; Green Lake, Uinta Mountains. The range of measurements of the adult specimens in millimeters is as follows: Four males, wing, 190.2-177.0 (185.5); tail, 133-125.0 (128.3). Five females, wing, 212.0-198.0 (206.0); tail, 131.2-130.0 (130.4).

The Sparrow Hawk, a common bird in the Basin, ranges from the lowlands to timberline in the mountains. In the spring it appeared in largest numbers between May 15 and 30. After the first of June there was a dispersal of the population over the Basin. While there was a preference for the wooded river valleys, the birds were also seen feeding over the edge of the arid bench lands adjacent to the river valleys. Along the Green River valley pairs of sparrow hawks nested wherever suitable sites could be found. There was a very wide nesting distribution, for these birds were found nesting in all communities up to timberline. In the fall the sparrow hawks became numerous, especially from September 15 to the end of the month. At this time there was a gradual movement of the birds down the river and creek valleys of the territory studied. A. C. Lloyd says that

this hawk was among the common birds observed at the Ashley Creek marshes during the spring and summer of 1934 and 1935.

***Dendragapus obscurus obscurus* (Say). DUSKY GROUSE.**

Two specimens: (a). seventy-five miles south of Ouray; (b). four miles east of Kamas, Wasatch Co.

	No.	Date	Wing	Tail	Tarsus	Culmen
(a).	121792	♀ August 5	222	167	29	23.5
(b).	121743	♀ July 21	225	159	38	22.0

These birds are undoubtedly *D. obscurus obscurus* but the saddle is dark with narrow light tan cross bars; the back mottlings lack the gray of *richardsoni* and the rusty of *fuliginosus*.

This large grouse is not so abundant as the early settlers of the Basin found it fifty years ago. The present status of the bird would indicate that it now has a very scattered distribution. Considerable time was spent looking for these birds and inquiring about their breeding grounds. On July 21, while returning from Mirror Lake in the Bald Mountains, Wasatch County, I made a sudden stop about seven miles north of Kamas at the base of a very steep slope where scrub oak (*Quercus* sp.) formed a dense cover. A female and four young were crossing the road. The birds immediately flew into the dense oak thickets. A juvenal bird that had been killed on the road by a motorist was found and identified. Later a female and several young were collected. Forest rangers at Mirror Lake informed me that several flocks of these grouse were known to nest about nine miles northwest of Kamas in the Beaver Creek Canyon. The next evidence of the birds in the Basin was at Florence Canyon, seventy-five miles south of Ouray. The birds nested here along the rim of the canyon; and according to the ranchers of that region, they were found along these canyon rims throughout the year. They were very wary, and when I approached, they would fly up and dart down into the depths of the canyon forest. One female was collected on August 5. On the same day five adults and ten immature birds were flushed, but they sought the shelter of the canyons.

According to the early settlers, these fine birds were once very plentiful in the Uinta and Book Cliff Mountains, but they have been extensively hunted for food. Consequently, there is left but a remnant of the original numbers. Ridgway (1877, p. 598) states: "but it did not occur in abundance until we arrived at the Wahsatch and Uintah Mountains, where it

literally abounded in certain localities, particularly on the latter range." He collected adults and juvenal birds at Parley's Park, also at Pack's Canyon, Uinta Mountains, between June 25 and July 23, 1869.

***Bonasa umbellus umbelloides* (Douglas). GRAY RUFFED GROUSE.**

Three specimens: below Paradise Park, Uinta Mountains, altitude 8500 feet. On July 8 one female and two young birds were collected by J. K. Doult, of the Carnegie Museum, at the upper edge of the aspens where they meet the lodgepole pines at an altitude of 8500 feet. The following day a second visit was made to the locality, but no further grouse were observed. The fire rangers at Paradise Park, Mirror Lake, Moon Lake, Uinta Canyon, and Indian Canyon, all reported that these grouse are fairly common along the stream courses in the Uinta and the Book Cliff mountains, especially above an altitude of six or eight thousand feet. During our visit to Blue Mountain on June 26, a single bird was flushed at the edge of a deep canyon but immediately vanished from sight. A similar incident occurred at Green Lake on September 14, when two grouse were flushed at the brink of the Green River Canyon.

***Lagopus leucurus altipetens* Osgood. SOUTHERN WHITE-TAILED PTARMIGAN.**

The White-tailed Ptarmigan was once common in the high Uinta Mountains. Reports during recent years indicate that ptarmigan still are found in scattered flocks of from two to five birds in the vicinity of the Bald Mountains, north of Kamas. None of these reports has been verified.

***Centrocercus urophasianus* (Bonaparte). SAGE GROUSE.**

Twelve specimens: fifteen miles northeast of Vernal, Blue Mountains, altitude 8000 feet; Florence Canyon, seventy-five miles south of Ouray. These large grouse were common in certain areas throughout the mountains of the Basin. The first birds observed were on the *Artemisia* and *Atriplex* plains where they had been dancing. Unfortunately by May 7 the dancing had stopped, and the birds had begun to move up into the higher foothills. The first nest of the sage hen was found on the high, rolling sagebrush plateaus (*Artemisia* spp.) of Blue Mountain on May 15. It was located high up on a slope and under the protection of a dense sagebrush bush. The female sat quietly on her eight eggs and allowed me to approach within two feet before she made any attempt to leave. The eggs were just on the point of hatching, and as little time as possible was

spent in the vicinity of the nest. She returned in less than an hour and continued her incubating. It was interesting to note that the nest was on a cattle range, and the cattle had been feeding almost to the edge of the nest. But the dense canopy of the sagebrush bush acted as a barrier, preventing the cattle from trampling the nest. The same thing was noticed at other ranches. Even sheep were observed browsing all around a nest, but the bird still sat on her eggs. However, a large herd of sheep or cattle moving across a country might possibly do some damage to nesting sage hens. The coyotes that abound in the district take a heavier toll. Rasmussen (1938, p. 863), in his study at the Strawberry Valley Federal Refuge during 1936-37, lists the destruction of forty-one nests of a total of 161 nests studied; the causes being as follows: (1) Carnivores (coyotes, skunks, and weasels), 23 nests; (2) Raven, 7 nests; (3) Undetermined, 7 nests; (4) Domestic livestock, 2 nests; and (5) Man, 2 nests.

From the evidence gathered, it seems that in the early morning, just before sunrise, the hens come to the springs and water-holes where they spend an hour or more. The females return to their nests as the morning progresses while the males walk off across the slopes, browsing on sagebrush leaves, grasses, a few grasshoppers, and other insects. Rasmussen (1938, p. 856, 857) studied the food of the Sage Grouse from May to October of 1936-37 at Strawberry Valley. The total average food of the adults consisted of 97.68 per cent vegetable matter of which 77.50 per cent was *Artemisia* (2 spp.); the animal material comprised 2.35 per cent which was made up mainly of the *Formicidæ* (6 genera). Fifty-four per cent of the food of the juvenal birds during June and July was plant material, which was made up principally of *Artemisia* and *Polemoniaceæ* (Gilia). The animal material at this time amounted to forty-six per cent, which in turn was made up largely of *Hymenoptera* and *Formicidæ*. During August, September, and October, the juvenal birds became 97 to 99 per cent vegetarians, eating principally *Artemisia* (2 spp.). The animal material averaged from 0.5 to 4.5 per cent, consisting largely of *Formicidæ* (6 genera).

The birds rest in the shade of dense growths of sagebrush during the day. About four in the afternoon, they again come out of their retreats and continue feeding, going to water at dusk.

Later, on June 25-26, the Blue Mountain plateaus were visited again. The young had hatched and were flying with the adults; they could fly very well when but a week or so old. Many of these young birds retained downy plumage on the head, breast, and back, although their wings, tail,

and feet were well developed. When the young were put up, they scattered in all directions, making it almost impossible to locate them again, for they would remain motionless under a sagebush until they received a call from the female. After quietly resting out of sight for a short time, the female would begin to whistle or coo softly to gather her scattered flock. The slightest movement would cause the birds to vanish again. Also at this time the males began to gather. In the early morning and again at about four in the evening, flocks of from twenty-five to fifty birds could be seen quietly walking along the little valleys, browsing as they moved.

One of the finest flocks of sage hens in Utah is at Strawberry Reservoir on the Strawberry Valley Federal Refuge. Here, it is most gratifying to find that their summer and winter range has been turned into a state and federal wildlife refuge. When driving along U. S. Highway 40 in the morning or late afternoon, one can see large flocks of these birds strutting along the side or nonchalantly crossing the road. Their utter disregard for the vehicles causes many casualties among the sage hen population by thoughtless or ruthless motorists. The roadside is well-posted concerning the crossing of the sage hens, and there is little need for the continued slaughter that occurs in this manner. The rare opportunity of observing and studying the sage hens at this reserve is being utilized by the Agricultural College at Logan, where graduate students are making life history studies of this grouse.

According to LeRoy Kay, there were thousands of sage grouse on the flats at Strawberry in November of 1905. He says also that in the early 1920's, while dry farming was being carried on, sage hens were more numerous on Diamond Mountain than at any other place. They were there in countless numbers. However, it seems that one of the main reasons for the sudden disappearance of the birds has been due to the operations of groups of men who would go up into these mountains and deliberately kill sage grouse by the hundreds at any season, particularly during the summer. One authenticated report is that on one Sunday afternoon four men with .22 rifles and small bore shotguns killed 150 sage hens and left all but a half dozen or so to rot on the mountain. This type of destruction still occurs in some sections of the Basin, but fortunately, the practice is gradually being stamped out through the efforts of the state game wardens.

Mr. Kay, who has lived in the Basin the greater part of his life, says that the sage hens come out of the mountains with the first heavy snows and spend the winter on the flats between Brush Creek and Ashley Creek,

where they are able to feed on the shadscale and sage. At times in the fall these birds will eat quantities of choke cherries (*Prunus melanocarpa*). During certain years, when there has been little snow on the mountains, the birds have been known to remain on the mountain slopes throughout the winter.

In April, when the snow is gone from the lower plains, the winter flocks gather on certain high knolls of their winter range and there, just as the first red streaks of an early spring dawn break across the sky, the big grouse begin their dance. Ranchers and farmers of the Basin all talk enthusiastically of this performance. When the sheep and cattle are being moved to the summer ranges, the grouse will sometimes refuse to move from the path of a moving wagon or car, so intent are they in their dance. The birds begin to move gradually toward the mountain slopes as May approaches and to cease their dancing. By the middle of May the grouse are on the upper sagebrush flats, and many of the females are already brooding under the protection of a sagebrush thicket.

***Lophortyx californica californica* (Shaw). CALIFORNIA QUAIL.**

One specimen: two miles north of Jensen. This quail was introduced into the Basin about 1914. Since that time the birds have become numerous along the river bottoms. At the Ashley Creek marshes, several pairs of these birds nested during the early part of June. A. C. Lloyd saw numerous pairs and broods at the Ashley Creek marshes in 1934 and 1935. Local residents report that the severe winters with considerable snowfall are detrimental to the quail. The birds reach good numbers during a series of favorable years, and then experience severe reversals in times of stress.

***Phasianus colchicus torquatus* Gmelin. RING-NECKED PHEASANT.**

These pheasants were introduced into the Basin in 1900, and since that period they have increased continuously. The largest concentrations of these birds were found in the irrigated farming districts of the Green River, Duchesne River, White River, Ashley Creek, Brush Creek, Strawberry River, Provo River, and along many of the smaller watercourses of the region. In a strip of land extending from Ramsey Stewart's ranch on the west side of Green River to a point two miles south along the river, thirty-two pairs of pheasants were known to nest. The cocks could be heard crowing in the morning and evening about my camp at the Ashley Creek marshes throughout May and June. By the middle of August it is

not uncommon to see coveys of pheasants in the meadows or the sagebrush and greasewood thickets.

***Grus canadensis tabida* (Peters). SANDHILL CRANE.**

A large flock of fifty-four cranes was seen following the Green River valley northward on May 5. The birds were flying very high, but their loud trumpeting calls soon attracted attention. This was the only time that cranes were observed in the Basin. Older residents, however, recalled having seen these birds frequently during early spring and fall from twenty to twenty-five years ago. They said that in May migrating flocks would come to rest for the night on the large, flat sand bars in Green River just north of Jensen.

***Rallus limicola limicola* (Vieillot). VIRGINIA RAIL.**

Five specimens: near Jensen. This bird was not abundant. The few that were observed and collected were found in the Ashley Creek marshes. Their presence in the vicinity was hardly perceptible unless a careful hunt was made along the west side of the marsh in the late afternoon. At that time one or two rails were always seen, but if even slightly disturbed, they would dart back into the protection of reeds. One bird was seen in July at the edge of the marsh. Although attempts were made to locate its nest, the efforts were always unsuccessful. During the last week of September a number of these rails were seen at the edge of the marsh. These were probably local birds in addition to migrants. In 1934 and 1935, A. C. Lloyd found this rail common about the marsh but remarked on the very retiring nature of the bird. He collected a juvenal male on August 9, 1934.

***Porzana carolina* (Linnaeus). SORA.**

Five specimens: near Jensen. A number of sora rails were seen in company with a few Virginia rails during migration. At least four pairs of sora rails remained for the summer in the Ashley Creek marshes just east of our base camp. Although attempts were made to locate the nests, none was found. A. C. Lloyd had similar experiences during 1934 and 1935.

***Fulica americana americana* Gmelin. AMERICAN COOT.**

This was the most common water bird found in the Ashley Creek marshes. In May the marshes were fairly alive with the birds. Many

were migrants merely stopping over. However, by June a considerable population had begun to nest. On June 7, while out in the marsh lake on an island of reeds that covered about two acres, forty-three nests were counted. The same conditions prevailed in most of the other sections of the marshes, which were about two and a half miles square. By the first of July young coots were everywhere, and by September, with the arrival of the first migrants, great flocks of between two hundred and five hundred coots were seen out in the lake. Coots were also noticed in numbers at Strawberry Reservoir, Duchesne River, and on some small marshes just south of Heber.

Charadrius semipalmatus Bonaparte. SEMIPALMATED PLOVER.

This plover was not an uncommon migrant during early May and September. At this time it was seen frequently in small flocks of from two to five birds along the sand bars of Green River, at Strawberry Reservoir, and at Ouray at the junction of the White and Green rivers.

Oxyechus vociferus vociferus (Linnaeus). KILLDEER.

This was a very common summer resident of the Basin and was found in large numbers along Green River, Strawberry Reservoir, Ashley Creek, White River, Hill Creek, Duchesne River, and other places where water and suitable nesting sites occurred. In all of these places the birds nested in considerable numbers. During May and September, while migration was under way, large flocks of from twenty to thirty birds frequently were seen feeding in the open fields.

Pluvialis dominica dominica (Müller). AMERICAN GOLDEN PLOVER.

This plover was a fairly common migrant along Green River during the first week of May. A flock of forty-six was seen in a plowed field south of Jensen on May 2. A second flock of forty-six was observed flying low over the Ashley Creek marshes on May 6. Again, on September 10, a flock of eight birds was seen feeding in a small grassy slough just north of the Reservoir lake.

Squatarola squatarola (Linnaeus). BLACK-BELLIED PLOVER.

This bird was not observed in large numbers in the Basin. On September 10, at Strawberry Reservoir, several birds were heard whistling far out over the lake. By imitating their call, we got them to fly directly to us,

where they wheeled about for a few minutes before flying off. Fourteen birds were observed at the time. They probably pass through the Basin in larger numbers in October. Hayward (1937) remarks that the only published record for the Black-bellied Plover in the State was by Bent (1929) from Provo, Utah County, May 11. Hayward lists a number of records for Utah Lake, the latest being May 5, 1937.

Capella delicata (Ord). WILSON SNIPE.

Five specimens: two miles south of Jensen. Three pairs of these birds nested in the vicinity of the Ashley Creek marshes. Single individuals were seen at Ouray, six miles west of Myton; Hill Creek, twenty-five miles south of Ouray; Strawberry Reservoir; and in the Provo River valley, five miles below Heber. A. C. Lloyd found these birds fairly common about the Ashley Creek marshes in 1934 and 1935. He collected a set of four eggs on May 29, 1935.

Numenius americanus americanus Bechstein. LONG-BILLED CURLEW.

These birds were rare in the Basin; one pair was observed on the Green River flats, two miles north of Jensen, on May 11. Four birds were seen at Strawberry Reservoir on August 17. There were no evidences of nesting. A. C. Lloyd observed a single bird on June 3 and again on June 5, when it flew over his camp at the Ashley Creek marshes.

Bartramia longicauda (Bechstein). UPLAND PLOVER.

Ridgway (1877) reports that this species was rather common in July at Kamas Prairie.

Actitis macularia (Linnaeus). SPOTTED SANDPIPER.

One specimen: near Jensen. These sandpipers were not numerous in the Basin, although several pairs were seen along the Green River in the vicinity of Jensen from early May until late September. Young birds that were just able to fly were seen at the mouth of Ashley Creek on July 12. Singles and pairs of these birds were seen at Brush Creek, ten miles southeast of Vernal; Duchesne River, six miles west of Myton; Hill Creek, twenty-five miles south of Ouray; Strawberry Reservoir; Green Lake, Uinta Mountains, altitude 8000 feet; Provo River, five miles south of Heber; and the Yampa River, eight miles north of Elk Springs, Colorado.

***Tringa solitaria cinnamomea* (Brewster). WESTERN SOLITARY SAND-PIPER.**

One specimen: two miles south of Jensen. This sandpiper was not abundant in the Basin. At Ashley Creek marshes at least two pairs remained as residents. Although their nests were not located, they were paired and no doubt nested. In 1934 and 1935, A. C. Lloyd, while at the Ashley Creek marshes, saw four or five solitary sandpipers almost every day.

***Catoptrophorus semipalmatus inornatus* (Brewster). WESTERN WILLET.**

Two specimens: near Jensen. These birds were observed during migration. Until June 10 several birds were seen about the marshes of Ashley Creek and along the Green River. The birds were not noted after June 10 in the Basin until August 17, when twelve were seen at Strawberry Reservoir. Again, during the month of September, willets were numerous at Ashley Creek marshes. They were seen feeding in small flocks of from three to seven birds. Three birds were observed on October 4, feeding in a small pond near the highway six miles east of Duchesne. A. C. Lloyd collected two specimens, one on May 8, and the other on May 9, 1935, at the Ashley Creek marshes. He reports these birds to be fairly common during migrations.

***Totanus melanoleucus* (Gmelin). GREATER YELLOW-LEGS.**

One specimen: two miles south of Jensen. The Greater Yellow-legs occurs as a migrant in the Basin. Three birds were observed in a flock of fifteen lesser yellow-legs on May 4 at the mouth of Ashley Creek. At the same locality on September 25 two birds again were seen in a flock of eight lesser yellow-legs. A. C. Lloyd saw them in 1935 in flocks of four or five, mixed with larger flocks of lesser yellow-legs.

***Totanus flavipes* (Gmelin). LESSER YELLOW-LEGS.**

This species was common as a migrant during early May but became scarce by the last of the month. In the fall these birds were abundant and occurred in flocks of from ten to twenty birds, reaching the peak of their migration by the middle of September. They were very numerous in May and September at the mouth of Ashley Creek, and at Green River, Duchesne River, Strawberry Reservoir, and Provo River.

***Pisobia bairdi* (Coues). BAIRD SANDPIPER.**

These sandpipers were not abundant but appeared in small scattered flocks of from three to ten birds during early May and September. They were first seen along the Green River on May 4. During September they were observed in company with least and semipalmated sandpipers at Strawberry Reservoir and at the Ashley Creek marshes.

***Pisobia minutilla* (Vieillot). LEAST SANDPIPER.**

One specimen: two miles south of Jensen. Flocks of from ten to fifty least sandpipers were seen along the Green River and at the Ashley Creek marshes during the first two weeks of May. The first flock of the fall migration was observed at Strawberry Reservoir on August 17. At this time two mixed flocks of least and semipalmated sandpipers, numbering between twenty-five and thirty individuals, were seen shifting about and feeding on the mud flat at the northwest side of the reservoir. During September small flocks of between twenty and sixty birds were seen along Green River and at Green Lake.

***Pelidna alpina sakhalina* (Vieillot). RED-BACKED SANDPIPER.**

A. C. Lloyd reports that on May 1, 1935, he saw a single red-backed sandpiper in a flock of least sandpipers.

***Limnodromus griseus scolopaceus* (Say). LONG-BILLED DOWITCHER.**

Three specimens: twelve miles east of Vernal. Two females in full breeding plumage were collected from a flock of forty-two birds on May 4. The dowitchers fed along the shallow muddy shores or out on the grassy (*Distichlis stricta*) meadow (Graham, 1937) about the Ashley Creek marshes. This meadow became flooded during early May from the overflow of Ashley Creek, and the subsequent green, grassy meadow offered excellent feeding grounds for numerous migratory birds. Again, on May 13, a second flock of dowitchers dropped in and fed on the *Distichlis* meadow. This flock numbered only seven individuals and disappeared by May 15. During the fall migration a flock of thirty was observed at Strawberry Reservoir on September 10. On September 25, at the mouth of Ashley Creek, a flock of twenty-six was seen feeding on a sand bar. A. C. Lloyd did not see any birds of this species in 1934, but from April 30 to May 3, 1935, several flocks were recorded at the Ashley Creek marshes.

Ereunetes pusillus (Linnaeus). SEMIPALMATED SANDPIPER.

Three specimens: two miles south of Jensen. These birds were the most numerous of the sandpipers that passed through the Basin during the spring and fall migrations. By the first two weeks of May it was common to see flocks of between two and three hundred feeding about the Ashley Creek marshes and along Green River. Two early fall flocks of from twenty-five to thirty individuals were noted at Strawberry Reservoir on August 17, in company with some least sandpipers. During the month of September, at Green Lake in the Uinta Mountains, and at Green River, Ashley Creek marshes, and Strawberry Reservoir, these sandpipers appeared in flocks that often numbered five hundred.

Limosa fedoa (Linnaeus). MARBLED GODWIT.

One specimen: twelve miles east of Vernal. Flocks of from ten to thirty marbled godwits occurred in the Basin as migrants during May. A female with well-developed ovaries, indicating that she was in full breeding condition, was collected on May 6. On May 10 a pair of godwits was feeding in the *Distichlis* meadow when suddenly they began to call loudly and to fly about over the marsh, where they started their mating performance. Presumably, the male was the more aggressive. By the end of May most of the birds had moved on, although several were seen at Strawberry Reservoir on August 16. Reports from ranchers in the vicinity indicated that the birds were seen throughout the summer, although no one actually had found a nest. A. C. Lloyd says that large flocks occurred during the spring of 1935 at Ashley Creek marshes, but after the first week of June none was recorded.

Crocethia alba (Pallas). SANDERLING.

Two specimens: two miles south of Jensen. During the spring migration only a few birds, numbering from four to eight to the flock, were seen at the Ashley Creek marshes between May 4 and May 10. In the fall they were recorded first at Strawberry Reservoir, when a flock of six birds was observed feeding at the edge of a mud flat. During the last two weeks of September, small flocks of between five and twenty birds constantly were seen along Green River and on the mud flats of the Ashley Creek marshes. A. C. Lloyd collected a female on May 21, 1935, at the Ashley Creek marshes. He reported small flocks in the vicinity of the marsh and along Green River during the spring migration.

***Recurvirostra americana* Gmelin. AVOCET.**

Two specimens: near Jensen. These graceful waders were not common in the Basin. Five were seen between May 15 and 17 at the Ashley Creek marshes. They seemed to be intent upon nesting, but this was probably because of the flooded *Distichlis* meadow, which afforded attractive feeding grounds for the short time before they continued their flight. One pair which remained until late May was driven out of the *Distichlis* meadow by an early flood. On August 16, at Strawberry Reservoir, three were seen, but other than these no further avocets were observed in the Basin. A. C. Lloyd saw no avocets in or around Ashley Creek in 1934, but in 1935, in early May, he recorded several flocks with as many as eleven in a flock.

***Himantopus mexicanus* (Muller). BLACK-NECKED STILT.**

This stilt is a rare visitor to the Basin. It seems strange that the Black-necked Stilt nests in large numbers at Great Salt Lake and the Great Bear marshes just on the other side of the Wasatch, yet does not nest in the Basin. A. C. Lloyd saw a pair on June 25 at the Ashley Creek marshes. They remained the one day and vanished the next.

***Steganopus tricolor* Vieillot. WILSON PHALAROPE.**

Four specimens: twelve miles east of Vernal. Four birds, two females and two males, were collected at Ashley Creek marshes on May 14. The females were in full nuptial plumage, showing no sign of their winter plumage. The males still retained a few white winter feathers on the head and back, which gave the birds a very light and mottled appearance. In the large flocks seen, it was evident that at least forty per cent had not attained full breeding plumage by May 14. Large flocks of phalaropes gathered in the flooded *Distichlis* meadow just south of the mouth of Ashley Creek. Flocks of from ten to one hundred and fifty were seen every day from May 12 to 19. It was remarkable how these meadows of salt grass (*Distichlis stricta*), when flooded, resembled the grassy marshes of the birds' nesting grounds. This aspect, as well as the abundance of food in the form of Cladocera, Copepoda, and numerous other invertebrates, was no doubt responsible for the extended visit which the birds made. On August 17 several flocks of Wilson phalaropes were seen on Strawberry Reservoir. Flocks of from twenty-five to fifty birds were observed almost every day at the Ashley Creek marshes during the last two weeks of September.

Lobipes lobatus (Linnaeus). NORTHERN PHALAROPE.

Two specimens: two miles south of Jensen. This phalarope is a common migrant in the Basin. A flock of two hundred was observed on May 4 at the Ashley Creek marshes. Numerous flocks of from two hundred to five hundred were seen at Strawberry Reservoir on September 10. A. C. Lloyd considered this species very common during the middle of May, 1935, at Ashley Creek marshes, where he saw flocks of several hundred almost daily.

Larus californicus Lawrence. CALIFORNIA GULL.

These gulls were irregular visitors to the Basin. One was seen on the Green River below Jensen on May 10, and two dark juvenal birds at Strawberry Reservoir on August 17. A. C. Lloyd saw a flock of fifty at Ashley Creek marshes about the middle of May, 1935.

Larus delawarensis Ord. RING-BILLED GULL.

One specimen: twelve miles east of Vernal. This specimen had not yet attained its full adult plumage; the rectrices still showed a slight dark band near their terminal end, and the remainder of the plumage was typically adult. The feathers throughout were badly worn. The Ring-billed Gull was never seen in numbers in the Basin. During May and September, particularly, several individuals always could be seen flying about over the Ashley Creek marshes, hunting along the shore line or above Green River. Two or three were seen throughout the summer on Green River, but there was no indication of nesting. However, some of the ranchers along the river, who were careful observers, said that during past years a pair or two of these gulls nested on the large sand bars of Green River, between Jensen and the mouth of the Green River Gorge. Ring-billed gulls were seen also at Strawberry Reservoir, August 11, 16, and 17; and at Duchesne River, five miles east of Duchesne on August 11.

Larus pipixcan Wagler. FRANKLIN GULL.

A flock of twenty-eight Franklin gulls was seen over the mouth of Ashley Creek on May 10, apparently following the Green River valley, for they were flying in a general northeasterly direction. The birds were exceptionally noisy, and they moved along quickly, showing no interest in the large marsh over which they were flying.

***Sterna forsteri* Nuttall. FORSTER TERN.**

This tern was rare in the Basin; only two were observed. They were seen flying along the Green River valley on May 10.

***Hydroprogne caspia imperator* (Coues). CASPIAN TERN.**

There is a paucity of records for the Caspian Tern in the Uinta Basin. None was observed in 1937, but on July 19, 1935, A. C. Lloyd saw a pair flying over the Ashley Creek marshes. The Caspian Tern is found in large numbers around the Great Bear marshes, north of Salt Lake City, which are separated from the Uinta Basin by the Wasatch Mountain range. The terns should find it comparatively easy to reach the Basin by way of the Green River, or by the Provo River, which latter cuts through the Wasatch Mountains, for along both of these rivers there is an abundance of food.

***Chlidonias nigra surinamensis* (Gmelin). BLACK TERN.**

One specimen: two miles south of Jensen. This species was not abundant in the Basin, even during migrations. A small group of eleven was seen in the Ashley Creek marshes on May 10, but they soon moved on. Later, on July 23, at a point on the Yampa River eight miles north of Elk Springs, Colorado, three birds were seen flying low over the river. On July 24, 25, and 26, thirty birds were seen along the Yampa River. From their actions it was evident that they had nests on a sand bar in midstream that was grown over with rushes. This was the only colony seen and the only evidence of nesting terns in the Basin.

***Zenaidura macroura marginella* (Woodhouse). WESTERN MOURNING DOVE.**

One specimen: Green Lake, Uinta Mountains. This dove was one of the commonest birds in the Basin, and was found from the "bad lands" of the shrub deserts to the slopes of the surrounding mountains up to an altitude of 8000 feet. A feature of the water-holes or springs of the desert was the large numbers of doves which came and went from the springs in a continuous stream throughout the day. When a bird came in from the desert and flew down to the edge of the pool to drink, it usually took a "siesta" in the cool shade of the bordering dense thickets. Often from fifty to a hundred doves would collect at these favorite water-holes during

the day. When frightened, they merely flew off a short distance and came to rest on the ground or in a low bush and waited until the intruder had gone.

The nests were scattered from the low desert shrub to the coniferous forest of the high mountains. Preferred sites were in dense thickets of willows and other shrubs that covered the floodplains of the Basin. Nesting was carried on during June and July; and by the end of July large numbers of young in immature plumage had joined the adults, making up flocks of between fifty and two hundred birds which would be found around a favorite spring. Other than these aggregations about the springs, the doves seldom flew in flocks of more than six to eight birds. Despite the fact that there were a great many doves in the Basin, they did not cause any noticeable damage to the grain fields along the river.

***Tyto alba pratincola* (Bonaparte). BARN OWL.**

Reports of this owl at Vernal were authenticated by several residents. It seems that during certain years, these owls are found more frequently than at other times. Dale Stewart reported having seen one near Jensen in 1936. In 1937, on August 6 at Hill Creek, forty miles south of Ouray, a single bird was flushed from a hole in the face of a high cliff.

***Otus asio inyoensis* Grinnell. INYO SCREECH OWL.**

Four specimens: two miles south of Jensen. These specimens, collected by A. C. Lloyd between July 25 and 30, 1935, are now in the collection of Dr. Max M. Peet. Three are in juvenal plumage. They are already beginning to show signs of the immature plumage over the breast and back. They are very pale throughout, as is true of the one adult female, which has a less brownish and a more ashy tone to its general coloration than that of *O. a. maxwellia*. They were identified by H. C. Oberholser as *O. a. inyoensis*. He writes, in a personal letter, that the range of this bird now extends from the Inyo Mountains of southeastern California through Nevada to northern Utah, and possibly to southeastern Oregon, and not improbably to southwestern Idaho.

During a conversation A. C. Lloyd said that these screech owls were found in the dense willows of the *Populus Sargenti-Salix* Community at the mouth of Ashley Creek. The birds had nested there, and the female was still feeding the juvenal birds when taken.

***Bubo virginianus occidentalis* Stone. MONTANA HORNED OWL.**

One specimen: twenty-five miles northeast of Kamas, Wasatch County. This large owl was found only in the more inaccessible parts of the Basin. Hunted rather extensively as "vermin" by ranchers, farmers, and sportsmen alike, these birds have become greatly reduced and are very shy, making it difficult even to locate them. The specimen collected on July 16 was in juvenal plumage, having considerable down about the head, breast, belly, and flags. Although very dark, it has many light warm buff markings throughout its plumage.

***Glaucidium gnoma pinicola* Nelson. ROCKY MOUNTAIN PYGMY OWL.**

A small owl was reported by Leo Wild, a rancher, from Hill Creek. He informed me that every summer several very small owls may be seen in the dense thickets of willows that enclose the creek in many places. He has seen the owls in the vicinity of his ranch throughout the year. In the winter the little owls become so tame that they are caught occasionally. There is no definite evidence as to whether or not these small owls are the Rocky Mountain Pygmy Owl, but the mere fact that owls of this size are seen in the Basin each year would indicate the possibility of the presence of this subspecies.

***Speotyto cunicularia hypugaea* (Bonaparte). WESTERN BURROWING OWL.**

Ten specimens: twenty miles east of Vernal; seventeen miles south of Vernal; and two miles south of Jensen. Burrowing owls were not numerous in the Uinta Basin, although there were a few scattered colonies found in similar environments in the Mixed Shrub Desert Communities. They built their nests in deserted prairie-dog burrows. One colony, seventeen miles south of Vernal, was in a *Chrysothamnus* Community, where it was associated with and merged into an *Atriplex-Tetradymia* Community. Scattered clumps of cactus (*Opuntia rhodantha*) were prevalent throughout the two communities.

The first birds were seen along the main highway on May 6, twenty miles east of Vernal, where there was considerable shrub desert (*Atriplex-Tetradymia* Community). Later, on June 20, seventeen miles southwest of Vernal, I noticed an owl, sitting on a post close to the road. Frightened by my close approach, the bird flew on a short distance and alighted on a rocky knoll. A second visit was made to the same locality on June

23, and this time a second bird flew up from the ground, where it had been hidden by some scattered rabbitbrush. Further investigation revealed the burrow to their nest. The entrance clearly indicated that there were young, for the ground was strewn with half-eaten kangaroo rats (*Dipodomys ordii*) and spade-foot toads (*Scaphiopus intermontanus*). After digging for nearly two hours in the soft, sandy soil of the desert floor, we excavated a hole ten feet long and between two and four feet deep. The dead carcasses of rats and toads became more numerous, and the odor grew stronger as the nest came into sight. A few bits of grass were found, although these may have been used by the former occupant, a prairie dog. The nine young became frightened when the daylight was let in, and in unison they hissed and squawked, making a noise that sounded surprisingly like the susurrant of a big rattlesnake. The nine young varied in age from one that had just hatched to birds that were nearly full-grown, with well-developed wings and tail-feathers. In the meantime, the adults kept flying about in wide circles, clicking their bills. When I examined the nest, eighteen half-eaten spade-foot toads and the remains of twenty-two kangaroo rats were found, revealing that the owls must be very busy during the early morning, evening, and at night, hunting for food.

While I was driving along the roads in August, it was common to see owls resting on fence-posts or on low mounds, where they would watch the car without any apparent alarm; but the moment I stopped near them, they would fly. There were three points in the Basin where they could always be seen, since these were close to nesting sites: one, four miles southwest of Jensen; another, twenty miles east of Vernal; and the last, seventeen miles southwest of Vernal. The birds all seemed to leave their favorite grounds by the first of September. After this date they would be found scattered about over the shrub-deserts; at first, in small family groups of from three to ten, and later as occasional individuals. By September 20, the burrowing owls had disappeared and none was observed in the Basin after this date.

Asio wilsonianus (Lesson). LONG-EARED OWL.

Four specimens: Jensen. A. C. Lloyd collected two males and two females near Jensen on April 24 and May 15, 1935. The stomach of the female taken on April 24 contained the remains of a kangaroo rat. This seems to indicate that these owls travel over the surrounding shrub desert, at least during the early morning and evening. None of these owls was observed in 1937. P. A. Taverner notes that specimen 1899 in the National

Museum of Canada is very pale, the ochers being largely replaced by ashy gray.

Asio flammeus flammeus (Pontoppidan). SHORT-EARED OWL.

This owl was seen only once, at the Ashley Creek marshes on September 21, 1937.

Phalaenoptilus nuttalli nuttalli (Audubon). NUTTALL POOR-WILL.

One specimen: two miles south of Jensen. A. C. Lloyd collected this bird, a male, on August 19, 1935. It is in the National Museum of Canada. P. A. Taverner remarks that the specimen is not distinguishable from gray birds taken at Osooyos, British Columbia. Ridgway (1876) records an adult male taken on July 7, 1869, in the Uinta Mountains. From the description of his route, this bird was collected at some point on the western spur of the Uinta Mountains.

Chordeiles minor howelli Oberholser. HOWELL NIGHTHAWK.

Eleven specimens: Jensen; two miles south of Jensen; forty miles north of Vernal; and eight miles north of Elk Springs, Colorado. Nighthawks were first seen in the Basin along Green River on May 14 at a spot near Jensen. A considerable flock in migration was flying high in widely diffused formation; each bird several hundred yards from the next. Several races may have been represented, but it was impossible to collect any specimens at the time. Since *howelli* later was found to be the nesting form in the Basin, probably many of these birds were of this variety.

Nighthawks were seen frequently in the evenings along Green River or out over the shrub deserts, where they seemed to be considerably concentrated. Several were collected and all proved to be *howelli*. On July 24, eight miles north of Elk Springs, Colorado, a nest was located high up on a clay and gravel hill which was bare of vegetation at its summit. Here the nighthawk had laid its eggs in a slight depression in the gravel. At the time there were two eggs in the nest. These proved to be two-thirds incubated. The nesting bird was identified as *howelli*. Later that evening, while collecting in this locality, but lower along the Yampa River, I observed a large number of nighthawks feeding on flying insects that had concentrated over the tall grassy meadows and weedy thickets. Upon collecting several specimens, I found that there were two subspecies present, *howelli* and *henryi*, but *howelli* was the more abundant form. This is substantiated on Oberholser's map (Oberholser, 1914).

The Howell Nighthawk has an extensive range in the Basin. It was most numerous in the shrub deserts, but I saw large numbers at Green Lake, Uinta Mountains, at an altitude of 8000 feet. On July 3 a nesting population frequented the open yellow pine forests that were scattered over large strips of broken rocky ridges.

From July to the middle of September nighthawks were often seen along the numerous watercourses of the Basin. The largest concentration seemed to be centered out over the shrub desert, particularly in the more barren "bad land" sections. Nighthawks continued to be seen after the middle of September, but most of them were flying southward, following the Green River valley. By the last week of September only an occasional bird was seen. Ridgway (1876) reports collecting a nest with one egg in the Uinta Mountains (head of Duchesne River) on July 8; a nest with one egg at Parley's Park on July 17; a nest with two eggs at Parley's Park on July 23; and two females and one male at Parley's Park between July 24 and August 26, 1869.

Chordeiles minor sennetti Coues. SENNETT NIGHTHAWK.

One specimen: two miles south of Jensen. Little could be learned about this bird, since only the single specimen was collected. A small group of six or eight birds appeared around camp on the evening of September 21. They flew very close to the ground, feeding on the swarms of gnats that had gathered. One of the birds was collected and found to be *sennetti*, but unfortunately no others were taken. The first published record of this bird for Utah appeared in 1940. The bird was taken at Utah Lake near Provo, in August, 1931 (Hayward, 1940). This was doubtless a migrant, as was my specimen taken on September 21.

Chordeiles minor henryi Cassin. WESTERN NIGHTHAWK.

One specimen: eight miles north of Elk Springs, July 23. This single specimen of *henryi* was collected from a concentration of feeding nighthawks, numbering between fifty and one hundred. The two others taken from this flock were *howelli*. Evidently, *henryi* was not the nesting form, although its presence at this date makes it possible to assume that a few individuals nest in the general locality. From available data it seems that the nesting ranges of *howelli* and *henryi* meet approximately in the region of the Uinta Basin. It appears that in certain restricted areas of the Basin each of these forms might nest separately. Hayward (1940) found a single

female with two immature young at Jensen on July 23, 1937. This would substantiate a breeding record for this form in the Basin. The breeding ranges of *henryi* and *howelli* obviously overlap here with the odds in favor of *howelli*. The subspecies *hesperis* (Oberholser, 1914), which meets *howelli* at the western extremity of the Basin, has been designated as the breeding form in northwestern Utah. Hayward (1940) has extended the range of *hesperis* to the southeastern part of the state. A more intensive survey of Utah nighthawks ought to bring to light an interesting problem in the breeding ranges of the three related forms: namely, *henryi*, *howelli*, and *hesperis*.

***Aeronautes saxatalis sclateri* Rogers. WHITE-THROATED SWIFT.**

Nine specimens: twelve miles east of Vernal and two miles south of Jensen. On an average the wing measurements of the Uinta Basin specimens (males, 142.8 mm., females, 144.3 mm.) are larger than southern specimens from Sonora (males, 134.3 mm., females, 137.0 mm. [Rogers, 1939]), which agree with the limits of *A. s. sclateri*. The wing measurements of the Uinta Basin birds are not so large as specimens from Montana, which average: males, 147 mm., females, 146.2 mm. The Uinta birds are intermediate in this character. Rogers points out that there are no subspecific variations in color between *A. s. saxatilis* and *A. s. sclateri*. The race *A. s. sclateri* cannot be called well marked. The only differentiating character is the slightly larger average wing measurements.

Although these large swifts were numerous in the Basin, they seemed to be somewhat restricted in their distribution. The first were seen at the Ashley Creek marshes near our camp site on May 1. A large flock of two or three hundred suddenly appeared and continued to fly high over the marshes from 5:00 P.M. until about 7:30 P.M. Just before dusk they disappeared as quickly as they had appeared. The birds, flying off in the direction of the marshes, continued to return and depart each evening at the same hour.

On the 26th of May, while at Ashley Creek Canyon and along the Dry Fork, a tributary of Ashley Creek, two nesting colonies were located: one in the canyon, and the other on the face of a very high cliff. Here, at times, the air seemed to be full of twittering swifts as they went through their aerial acrobatics far up among the highest cliffs. The nests were located in crevices in the face of the cliff from two hundred to five hundred feet up the precipitous walls. The birds evidently had young, for there was a continuous stream of adult birds going back and forth. The incom-

ing birds seemed to fly directly to the nesting holes without hesitation in their flight.

During the summer I discovered large colonies scattered over the Basin, and always in localities where high precipitous cliffs offered suitable nesting sites. Colonies were seen at Hill Creek, forty miles south of Ouray; Florence Canyon, seventy-five miles south of Ouray; Indian Canyon, twenty miles southwest of Duchesne; Blue Mountain, Uinta Mountain, twenty-five miles east of Vernal; Green Lake, Uinta Mountains, forty miles north of Vernal; Whiterocks; mouth of Green River Gorge; Provo River, twenty miles southeast of Kamas, Wasatch County; and Yampa River, eight miles north of Elk Springs, Colorado.

In September, large flocks would come to the Ashley Creek marshes and along the Green River valley to feed at about 10:00 in the morning and again at about 4:00 or 4:30 in the afternoon. On September 25 a flock of several hundred birds appeared at the usual time in the morning and increased in numbers, until by noon there were thousands flying about. The day was calm and warm with a consequent concentration of flying insects over the marshes and fields. The swifts kept shifting from one locality to another. First, there would be hundreds flying by, only four or five feet above the grass; suddenly, the whole group would rapidly gain altitude until, flying in great circles, they were several hundred feet in the air. And then like plummets, they would drop close to the ground at some particular spot over the marsh. A few birds were noticed on September 27, but after that day swifts were not seen again. The concentration of September 25 and 26 was apparently a final gathering before the main southward migration.

Archilochus alexandri (Bourcier and Mulsant). BLACK-CHINNED HUMMINGBIRD.

Three specimens: ten miles west of Vernal; eight miles west of Vernal; and two miles south of Jensen. This hummingbird was rare in the Basin in 1937; a single specimen was taken ten miles west of Vernal on May 28. The locality was along the banks of a dry stream in a deep canyon, which at this point was densely wooded with junipers (*Juniperus utahensis*). The single male was first observed as it buzzed angrily about, apparently annoyed and acting as if there were a nest close by. However, after I waited for an hour or more, the bird showed no signs of having a nest. A. C. Lloyd found this hummingbird an uncommon visitor at the Ashley Creek marshes, where he collected one male on May 8, 1935. He collected

a single male eight miles west of Vernal in the Juniper Community on May 28, 1934. The available information seems enough to show that the Black-chinned Hummingbird nests in the Basin, but is sparsely scattered throughout the juniper communities.

Selasphorus platycercus platycercus (Swainson). BROAD-TAILED HUMMINGBIRD.

Five specimens: twenty-five miles east of Vernal; twenty miles southwest of Duchesne; and respectively twelve, twenty, and forty miles north of Vernal. This hummingbird was the common nesting form found in the Basin. The first bird was seen on May 20, when it came to rest on a fence near my camp at the Ashley Creek marshes. The bird was very shy and darted away before it could be approached closely. On May 24, while on the southeast slope of Blue Mountain at an altitude of 6500 feet, several were observed in a deep canyon of the juniper forest. They did not appear to be feeding, but they kept flying out from favorite perches, disappearing for a moment and then suddenly appearing again on a particular dead branch.

Later, several pairs of these birds were found to be nesting at various places on the mountain slopes between 6000 and 8000 feet, the greatest numbers being found at 7000 feet. From five to fifteen birds were seen at Ashley Canyon twelve miles north of Vernal; on the southeast slope of Blue Mountain; at Florence Canyon, seventy-five miles south of Ouray; ten miles south of Green Lake; and fifteen miles below Paradise Park.

The above distribution places the birds in the vegetational zones that constitute the Juniperus-Pinus and Aspen communities.

After September 20 these hummingbirds were not seen in the Basin, although during the last week of August and the first two weeks of September there was a considerable concentration in the vicinity of Ashley Creek marshes. A. C. Lloyd reports having seen only one male, which he collected at the Ashley Creek marshes on May 7, 1935.

Selasphorus rufus (Gmelin). RUFOUS HUMMINGBIRD.

The Rufous Hummingbird is an erratic visitor to the Basin. In 1937 I did not notice one of these hummingbirds throughout my entire stay. A. C. Lloyd did not record any in 1934 until July 20, but after that date each patch of fireweed (*Chamaenerion angustifolium*) attracted at least three or four of these birds. Mr. Lloyd saw only two birds during the 1935 season.

Megaceryle alcyon alcyon (Linnaeus). EASTERN BELTED KINGFISHER.

One specimen: five miles south of Heber. Kingfishers were not numerous in the Basin. Their distribution was chiefly along the mountain streams and in the high mountain lakes to an altitude of 9000 feet. Individuals and pairs were seen at Ashley Creek Canyon, twelve miles north of Vernal; Green River in the vicinity of Jensen, and the Ashley Creek marshes; Paradise Park; Moon Lake; Blue Mountain; Beaver Creek, seven miles northwest of Ladore, Moffat County, Colorado; Junction of the Green and White rivers at Ouray; Duchesne River, six miles east of Duchesne; Strawberry Reservoir; and the Provo River five miles south of Heber. Because of its feeding habits and consequent effect on the trout streams, the kingfisher is not encouraged in many vicinities, which no doubt is responsible for its scarcity and spotty distribution in the Basin.

Colaptes cafer collaris Vigors. RED-SHAFTED FLICKER.

Nine specimens: twelve miles east of Vernal along the Green River; forty miles north of Vernal; and two miles south of Jensen. This species has a wide selection of habitat preferences, ranging from the river floodplains and desert scrub to the Picea-Abies Community of the high mountains at altitudes of 10,000 feet. Among the specimens collected and those observed, there was no indication of hybridization with *Colaptes auratus luteus*. Probably because of its wide adaptability and its large size, the Red-shafted Flicker was one of the most common and prominent birds found in the Basin. No matter where I went, the flickers were present with their loud, lusty cries and incessant sunrise hammerings.

The cottonwood river floodplain at the Ashley Creek marshes was one of the large concentration areas for the flickers. In a two-mile strip of cottonwoods along the west shore of the Green River, twenty pairs nested. The first nesting birds were observed on May 15. From this date until July 28, flicker nests were occupied, resulting in a surprising increase of these birds by August. During August it was common to see a flock of from twenty-five to fifty birds gathered along the cottonwood floodplains, where they were able to feed on quantities of ants and other insects gleaned from the trees and the ground cover. Flickers were still seen on September 30. They apparently remained in the Basin until the first cold weather in October. Later, on October 25, at St. George in southern Utah, large numbers of migrating flickers passed through.

Melanerpes erythrocephalus caurinus Brodkorb. RED-HEADED WOOD-PECKER.

On July 28, five miles southwest of Ouray, along the cottonwood flood-plains of the Green River, an adult male was found dead. No doubt the bird had been injured in some way, but its condition was too bad to tell exactly. It had died evidently several days before, and it was impossible to save the skin. This was the only evidence found of the Red-headed Woodpecker in the Uinta Basin. This bird is designated *M. e. caurinus* on geographical grounds.

Asyndesmus lewis Gray. LEWIS WOODPECKER.

Three specimens: two miles south of Jensen; and Ouray. This large woodpecker was rather rare. I found it in only two localities—four miles south of Jensen and five miles southwest of Ouray—both on the east bank of the Green River. The localities were similar in character, being situated in a late Cottonwood Floodplain Community in which the trees were large and widely spaced. Here, still standing, were numerous large dead trees which were used by the woodpeckers for nesting sites. At the locality below Jensen four pairs nested. One pair was feeding its young on June 5. It was interesting to watch the birds catching insects, flying out for them like flycatchers. At Ouray on July 25, only the one pair was seen. A. C. Lloyd collected a single female on July 19, 1935, two miles south of Jensen. This was the only bird of this species seen by him in 1934 and 1935.

Sphyrapicus varius nuchalis Baird. RED-NAPED SAPSUCKER.

Seven specimens: Green Lake, Uinta Mts.; two miles south of Jensen. These sapsuckers were not over-abundant in the Basin. They nested in the ecotone between the aspens and the pines of the Uinta, Wasatch, and Book Cliff mountains. Three pairs were seen at Green Lake on June 29. These birds were feeding young at nesting holes which they had made in live aspen trees. One nest was only five feet from the ground, but the other two were at least fifteen feet up.

The first juvenal bird collected was taken two miles south of Jensen near the Green River on August 9. With the young bird was an adult male in very worn and molting plumage. Adults in their fall plumage were encountered at Green Lake on September 15. From this date to the end of the month large numbers began migrating to the lower valleys of the

Basin's rivers. Specimen 122038, a male collected two miles south of Jensen on September 21, had acquired its full adult plumage except for a scattering of a few gray juvenal feathers on the breast. Specimen 122064 retained the gray juvenal breast feathers, but the remainder of its plumage was that typical of adult males.

***Sphyrapicus thyroideus nataliae* (Malherbe). NATALIE SAPSUCKER.**

Eight specimens: Green Lake, Uinta Mountains; twenty miles southwest of Duchesne. This species was rather scarce in the Basin, being found only in the two localities mentioned. The birds were shy and difficult to locate. At times they could be heard pounding softly or calling, but, even with these evidences of their presence, they had a habit of keeping a tree trunk between them and the observer. The birds at Green Lake were found in the yellow pine forests, usually in places where the aspens and pines made up a mixed forest. Here, in an area of about five square miles, at least eight pairs nested. In early September they were seen feeding young in the same locality in which they had been seen during June and July. At Indian Creek Canyon, twenty miles southwest of Duchesne in an alpine fir, Douglas fir, and aspen forest, three pairs were seen on June 18 and 19. On June 18 a male was seen to fly over to a tall aspen and disappear into a newly constructed hole, fifteen feet from the ground. From the squeaks that issued it was apparent that there was a family of young in the nest. Both parent birds were seen carrying food to the young. The male would fly to a dense alpine fir forest about 150 yards to the south, while the female flew northeast to a small stand of aspens. The birds were watched for an hour and a half, and during that period the male made five visits to the nest with food while the female made ten. With field glasses it was apparent that the greater bulk of the food consisted of flying insects such as small moths and gnats. These were the only two places in the Basin where the birds were seen. C. L. Hayward collected a specimen of the Natalie Sapsucker at Elk Park, ten miles west of Green Lake, between July 25 and 29, 1936.

***Dryobates villosus monticola* Anthony. ROCKY MOUNTAIN HAIRY WOODPECKER.**

Fifteen specimens: Green Lake, Uinta Mountains; five miles south of Jensen; Uinta Canyon, twenty miles southwest of Duchesne; and twenty-five miles northeast of Kamas. Juvenal males: 121607, 121581, and 121736, had a scarlet patch high on the crown; the forehead was black,

spotted with white. The distribution of this species in the mountains of the Basin was rather general, without any noticeable concentration. Where the birds occurred, they showed a preference for nesting sites in the higher altitude communities, from 7000 to 9000 feet in scattered yellow pine, alpine fir, aspen, and Douglas fir forests.

The first birds to come down from the mountains were seen at the Ashley Creek marshes on August 25. There was, however, no migration or general movement of the birds at this time from their nesting grounds in the mountains; they just seemed to filter down as fall approached. During the last two weeks of September a few individuals were seen in company with small groups of downy woodpeckers along the Green River floodplains.

***Dryobates pubescens leucurus* (Hartlaub). BATCHELDER WOOD-
PECKER.**

Eleven specimens: Jensen; two miles south of Jensen; Green Lake, Uinta Mountains; Uinta Canyon, twenty miles north of Roosevelt. In early May this race of the Downy Woodpecker was found to be numerous along the floodplains of Green River and Ashley Creek. Here the birds were seen busily working over the bark of the cottonwoods and willows. They had all vanished by the end of May and were not re-encountered until July, when immature birds were collected at Green Lake, Uinta Mountains. During the first week of July two nests, each with young birds that were still fed by the parent birds, were located in dead aspen limbs. On August 25 the first Batchelder woodpeckers were again seen along Green River, but it was not until September 20 that the birds moved down in any numbers into the lower valleys of the Basin.

***Picoides tridactylus dorsalis* Baird. ALPINE THREE-TOED WOOD-
PECKER.**

Four specimens: Paradise Park, Uinta Mountains; Bald Mountain, Uinta Mountains. This three-toed woodpecker has a restricted range in the mountains of the Basin. It was found at an altitude of 10,000 feet in the Lodgepole Pine (*Pinus Murrayana*) and Engelmann Spruce (*Picea Engelmanni*) communities. The birds were sparsely scattered through the dense coniferous forests, where they were found to be shy and retiring. The female, collected at Bald Mountain on July 20, still had distinct brood-patches, indicating that the bird had raised young at this locality. C. L.

Hayward collected six specimens of this woodpecker in July and August, 1930, at Mirror and Tryol lakes. Tryol Lake is four and one-half miles west of Mirror Lake, Uinta Mountains.

Tyrannus tyrannus hespericola Oberholser. WESTERN KINGBIRD.

Eight specimens: twelve miles east of Vernal; and two miles south of Jensen. This flycatcher was not numerous in the Basin; the first appeared at the Ashley Creek marshes on May 15. At least two pairs nested along the cottonwood floodplain just south of Jensen. On July 12 a pair of kingbirds with five young that were just able to fly appeared close to my camp at the mouth of Ashley Creek. The parent birds fed the young at brief intervals but kept them moving along. Two kingbirds were observed at Brush Creek on June 29; three, at the Yampa River, eight miles north of Elk Springs, Colorado, on July 23; two, at Hill Creek, forty miles south of Ouray, on August 7. A. C. Lloyd regarded this kingbird as an infrequent summer resident at the Ashley Creek marshes in 1934 and 1935. He noticed only a few scattered pairs.

Tyrannus verticalis Say. ARKANSAS KINGBIRD.

Seventeen specimens: twelve miles east of Vernal; Blue Mountain, 8000 feet altitude; six miles north of Jensen; Yampa River, Colorado, (juvenal male, July 24); Beaver Creek, Colorado. These kingbirds were very numerous in the cottonwood floodplains of the drainage systems in the Basin. They occurred in large numbers along the banks of Green River. The first birds appeared on May 4. From this date until the first week of September, they were among the most characteristic birds of the floodplains. For the most part, they preferred old stands of cottonwoods where the large trees were well scattered and the tall standing dead trees were numerous. From favorite perches near their nesting holes, they could be seen or heard throughout the summer. There was never any indication of migration among these birds. They seemed just to filter in and then vanish as the first cold of fall approached. The breeding population was, however, well distributed along the watercourses and even up on some of the mountain slopes. Four pairs were seen on the east slope of Blue Mountain at an altitude of 8000 feet on May 22. During August a decided movement was noticeable in the kingbirds, for they were then more frequently seen out on the shrub deserts and "bad lands." These birds were last seen in the Basin about the middle of September.

***Myiarchus cinerascens cinerascens* (Lawrence). ASH-THROATED FLY-CATCHER.**

Six specimens: near Jensen; two miles south of Jensen; ten miles west of Vernal; two miles south of Jensen; Cottonwood Springs; Blue Mountain. This flycatcher was not abundant in the Basin even during migrations. It had very secretive habits, although its loud call could be heard frequently. These flycatchers preferred the shelter of the dense willow thickets along the watercourses or that high up in the dense foliage of the cottonwoods. On June 28 a pair was seen at Cottonwood Springs, where they evidently had a nest close by, but they refused to approach it as long as anyone was near. Later, a few birds were seen in migration as they passed through the vicinity of Ashley Creek marshes. The last was seen on September 21.

***Sayornis saya saya* (Bonaparte). SAY PHOEBE.**

Twelve specimens: twelve miles east of Vernal; two miles south of Jensen; twelve miles, and fifteen miles southwest of Vernal. The Say Phoebe was a comparatively common bird of the "bad lands." During May a pair was seen almost every day in the vicinity of Ashley Creek marshes; but the birds always moved on, never remaining in any one locality. On a strip of shrub desert fifteen miles southwest of Vernal, a pair of phoebes was seen on June 12. By their actions it was soon discovered that they had a nest. The nest was built on the side of a rocky hill in a crevice in the rock. There were five young, that were just ready to leave the nest. The two parents made such a fuss that within a few minutes six other adults, seeming to come from nowhere, had joined them. A careful search uncovered three nests in similar locations. On June 21 I was surprised to find a nest of a Say phoebe with well-developed young on the rafters of a machine shed on Ramsey Stewart's ranch, which borders on the Ashley Creek marshes. The young left the nest on June 24.

While traveling over the Basin, one or two birds were frequently seen at such places as along the main highway, ten miles west of Myton; Ashley Creek; ten miles north of Vernal; along the main highway, fifteen miles southeast of Jensen; and at Horseshoe Bend on Green River. The last birds observed in the Basin were seen at Ashley Creek marshes on September 21. A. C. Lloyd found these birds to be very common in 1934 and 1935. Several pairs nested close to the Ashley Creek marshes.

Empidonax traillii adastus Oberholser. MOUNTAIN FLYCATCHER.

Twelve specimens: near Jensen; Hill Creek, forty miles south of Ouray; and five miles south of Heber. The Uinta Basin birds show on their dorsal surface more brown and gray than *E. t. traillii*; the bills are larger but not so large as *E. t. brewsteri*. Oberholser (1932) states that birds he examined from northern Utah were intermediate between *adastus* and *brewsteri* but leaned more toward *adastus*. The measurements of the Uinta specimens are comparable with those of Oberholser for *adastus*.

Uinta specimens	Wing		Tail		Exposed Culmen		Tarsus	
12 ♂♂	(68.5-73.0)	70.1	(56.5-64.0)	60.0	(12.0-13.0)	11.7	(16.0-18.5)	16.4
Oberholser, <i>E. t. adastus</i>								
10 ♂♂	(69.5-73.8)	71.8	(59.0-62.0)	60.6	(11.0-12.8)	12.1	(17-18)	17.4

This flycatcher was found to be common along the floodplain district of the Green River during spring migration. At least four pairs nested in the vicinity of the Ashley Creek marshes; their calls could be heard frequently during June. Juvenal birds were seen in the dense willow growth on the west side of the Green River, three miles south of Jensen, on June 25. In the vicinity of the upper Hill Creek district, about forty miles south of Ouray, three alder flycatchers were seen in the cottonwood floodplain, and one male was collected on August 6. Later, during migration, a single bird was taken on the Provo River, five miles south of Heber, on September 7.

Empidonax hammondi (Xantus). HAMMOND FLYCATCHER.

Three specimens: two miles south of Jensen; and Green Lake, Uinta Mountains. These birds were rare in the Basin; the first was seen and collected at Green Lake, Uinta Mountains, forty miles north of Vernal, on July 2 and 3. Although yellow pine was the dominant tree, these flycatchers preferred the scattered aspen thickets. On July 2 a single bird was seen catching flying insects at the edge of a grove of aspens. Disturbed by my presence, it became quite noisy. An attempt was made to locate the nest or possible young, but none was found. The following day, in another locality just a half-mile away in some aspens, a second bird was found. Both were males in very worn plumage. A third specimen was taken in the cottonwood floodplain of the Ashley Creek marshes, two miles south of Jensen, on August 9. This bird had evidently started its early migration along the Green River valley. C. L. Hayward collected

two specimens at Beaver Creek Ranger Station, twelve miles southwest of Green Lake, on May 30, 1936.

***Empidonax wrighti* Baird. WRIGHT FLYCATCHER.**

Five specimens: two miles south of Jensen; twenty miles southwest of Duchesne; seventy-five miles south of Ouray; and Blue Mountains, east slope, 8000 feet. These flycatchers were distributed rather unevenly over the Basin. During both the spring and fall migrations they were seen along the Green River valley, where they sought the protection of the dense willow and cottonwood thickets. Early migrants, they passed along the river valleys from the 17th of May to the end of the month. Later they moved to the high altitudes, where they nested at about 8000 feet in the aspen and willow thickets of the yellow-pine and lodgepole-pine forests. Although no nests were located, the birds observed at Blue Mountain on June 26, at Indian Canyon, twenty miles southwest of Duchesne on June 18, and at Florence Canyon, seventy-five miles south of Ouray, on July 30, were obviously summer residents. The individuals observed were all shy, keeping to the dense shrubby growths, where they fed close to the ground. At the slightest disturbance they would dart quickly out of sight.

***Empidonax griseus* Brewster. GRAY FLYCATCHER.**

Two specimens: male and female; Cottonwood Springs, June 28. The Gray Flycatcher is rare in the Uinta Basin. The two specimens taken were observed and collected on June 28. They showed well-worn plumage. The male sex organs were well developed; the female organs indicated that the birds had either recently laid or that the laying period was imminent. It seemed rather strange to find only one pair at Cottonwood Springs. The nest was not located but it could have been overlooked, for Linsdale (1936) states that the birds are restricted to sagebrush-covered areas during the time of nesting. This locality was at an altitude of 6000 feet and consisted of a stand of cottonwoods and dense shrubbery about the spring, which was entirely surrounded by a forest of juniper (*Juniperus utahensis*) and pinyon (*Pinus edulis*). The open areas among the junipers and pinyons had a shrub cover of sagebrush (*Artemisia nova*), and it was probably here that the birds were actually nesting. They were catching flies about the spring when observed and seemed to be centering their activities in this locality. The spring was also a center of concentration for a large number of other birds, since this was the only water available within six or seven miles on this semi-arid mountain slope.

***Empidonax difficilis difficilis* Baird. WESTERN FLYCATCHER.**

Two specimens: ten miles west of Vernal; and Uinta Canyon, twenty miles north of Roosevelt. This flycatcher was very rare in the Basin; only two were taken during migration. The first, a male in full adult plumage, having a decided greenish yellow wash over the underparts, crown, and back, was collected on May 28, ten miles west of Vernal. An immature bird was collected on August 28 at Uinta Canyon. It was seen alone at the edge of a dense growth of willows overhanging a small stream, where it was busily feeding upon flying insects.

***Myiochanes richardsoni richardsoni* (Swainson). WESTERN WOOD PEWEE.**

Eleven specimens: twelve miles east of Vernal; Paradise Park, Uinta Mountains, 10,050 feet; Ouray; Moon Lake, forty miles north of Duchesne; and Uinta Canyon, twenty miles north of Roosevelt. This was one of the commonest flycatchers in the Basin. It occurred as a summer resident and ranged from the floodplains of the river and creek valleys to the high altitude spruce-fir forests, such as we found at Paradise Park in the Uinta Mountains at an altitude of 10,050 feet. In a broad sense, the birds occurred wherever trees grew in the Basin.

***Nuttallornis borealis borealis* (Swainson).² OLIVE-SIDED FLYCATCHER.**

Nine specimens: thirteen miles east of Vernal; eight miles west of Vernal, two miles south of Jensen; Moon Lake, forty miles north of Duchesne; and five miles south of Heber. This flycatcher is found in considerable numbers along the main river valleys of the Basin during spring migration, from May 15 to June 10, and also in the fall, during September. It was nesting in the spruce-fir forests at Paradise Park, Uinta Mountains, at an altitude of 10,050 feet on July 1-10. Four males were observed and heard along the edges of the forest where the conifers bordered the mountain lakes. Their loud whistling song was characteristic of these regions. Very shy, they fed, for the most part, high up in the tallest spruce trees, and only came to lower levels when no one was in sight. Later, on August 20, while at Moon Lake, several flycatchers were observed in the dense coniferous forests about the lake. A female, collected from a group of

²A. J. van Rossem, Transactions San Diego Society of Natural History, 1934, 7:352 and Harry C. Oberholser, Scientific Publications, Cleveland Museum of Natural History, 1930, No. 1, v. 1:83-124.

four birds, was in very worn plumage. The birds were, as before, very shy and preferred the tallest dead pine trees, from which they would fly out and catch insects. The earliest fall records for the lower valleys at Jensen were made by A. C. Lloyd, who collected a male and a female on August 10, 1934, and a female on August 24, 1935, at the Ashley Creek marshes.

Otocoris alpestris leucolaema (Coues). DESERT HORNED LARK.

Ten specimens: near Jensen; twenty-two miles east of Vernal; ten miles west of Vernal; fifteen miles south of Vernal; twelve miles east of Jensen; fifteen miles, and seventeen miles southwest of Vernal; Cottonwood Springs; Horseshoe Bend, Green River.

This bird was common in both the spring and fall migrations and was an abundant summer resident. It was characteristic of the arid shrub deserts, particularly at the edge of the semi-arid and barren "bad land" sections of the Basin. This lark probably remains in the Basin or moves south two hundred miles or so during the winter months. It is the first to arrive in the early spring, appearing in medium-sized flocks in April, just as the snow begins to leave the plains. As early as May 10, young birds just able to fly were seen on the shrub desert, ten miles west of Vernal. Adults and birds in fully developed immature plumage were seen throughout the remainder of the summer in this general vicinity, also fifteen miles southwest of Vernal, and on the "bad lands" east of Green River. In late August the larks began to gather in flocks of from twenty to fifty birds, which were seen most frequently on the shrub desert plateaus.

Tachycineta thalassina lepida Mearns. VIOLET-GREEN SWALLOW.

Ten specimens: near Jensen; Hill Creek, forty miles south of Ouray. These swallows were numerous in the Basin, but rather unevenly distributed. In the summer they were found in the surrounding mountains, where they nested at altitudes from 6000 to 8000 feet. On May 31, the first birds were seen along the Green River in the vicinity of the Ashley Creek marshes. Here, large groups of between twenty-five and one hundred individuals were seen catching flying insects close to the surface of the water. From the above date onward, throughout the summer, they were frequent visitors to the marshes, appearing in the early morning and again at about four in the afternoon. The birds while feeding flew within a few inches of a small pool of water, wheeled about, and came back over the same spot; thus they formed a long string which made a continuously moving circle. These birds from the mountains seemed very tame

and flew about catching insects within a few inches of the observer's face.

Nesting populations were noticed particularly at Green Lake in the Uinta Mountains, Strawberry Reservoir, and at Hill Creek, forty miles south of Ouray. In many instances the main feeding localities were located ten or even thirty miles from the nesting grounds. These places were along the valleys of Green River, White River, Duchesne River, Ashley Creek, Strawberry Reservoir, Yampa River, Beaver Creek, and Hill Creek. The last birds to be seen in the fall were at the Ashley Creek marshes on September 25. For four or five days before this period, very large numbers of swallows began to gather, and they could be seen sitting in long strings along the telephone wires or flying out over the rushes of the marsh, where they gathered by the thousands in the evenings.

Riparia riparia riparia (Linnaeus). BANK SWALLOW.

A very common swallow during spring and fall migrations, but as summer residents they were rather spottily distributed. A nesting colony was observed at Ashley Canyon, ten miles north of Vernal, on June 15, and one on Hill Creek, forty miles south of Ouray, on August 5. By late August and September large flocks were observed congregating about the Ashley Creek marshes. The last birds were seen on September 28 on Green River, two miles south of Jensen.

Stelgidopteryx ruficollis aphractus Oberholser. WESTERN ROUGH-WINGED SWALLOW.

Three specimens: twelve miles east of Vernal; and Ashley Canyon, ten miles north of Vernal. In these specimens the middle of the abdomen is white and the upperparts are much darker than in *Stelgidopteryx ruficollis serripennis*. This swallow was more numerous than was at first supposed, for it was observed in mixed flocks with bank swallows, the latter predominating. It was first found in Ashley Canyon on June 15, when a single bird was collected from a flock of five bank swallows that had come to rest in a dead tree. Later, in August and September, odd individuals of this species could be picked out of the congregating flocks of bank swallows. The last birds were observed at the end of September.

Hirundo rustica erythrogastra Boddaert. BARN SWALLOW.

The barn swallow was common in the farming districts along the river and creek valleys of the Basin. Two pairs arrived at the Ramsay Stewart ranch at the western edge of the Ashley Creek marshes in early June.

Here they remained throughout the summer, building their nests in the barn. The young appeared on July 12, but even after they were well able to fly, the swallows stayed about the ranch until late in September. Other nesting pairs were seen at Brush Creek, twelve miles north of Vernal; at the junction of the Dry Fork and Ashley Creek; Ouray; four miles west of Myton; Dinosaur National Monument; Strawberry Reservoir and five miles south of Heber on the Provo River.

Petrochelidon albifrons albifrons (Rafinesque). NORTHERN CLIFF SWALLOW.

Seven specimens: two miles south of Jensen. This swallow is a common migrant and summer resident, nesting along the cliffs of the rivers and creeks of the Basin. The largest colonies were observed on the east bank of the Green River, six miles south of Jensen, and on Hill Creek, forty miles south of Ouray. The birds were seen in large migratory flocks in the vicinity of the Ashley Creek marshes in late September.

Progne subis subis Linnaeus. PURPLE MARTIN.

The martin was not plentiful in the Basin. The main group of about thirty birds were seen about the town of Vernal, where they nested in bird boxes. Three pairs were seen at Ashley Creek canyon on June 22, and five on the Duchesne River, three miles east of Duchesne.

Perisoreus canadensis capitalis Ridgway. ROCKY MOUNTAIN JAY.

Twelve specimens: Paradise Park, Uinta Mountains, 10,050 feet; Bald Mountain, 10,500 feet. These birds were found to be restricted to the high spruce-fir forests at an approximate altitude of 10,000 feet. In both localities they were found in the same general environment. In July and August they wandered about in small family bands made up of the two parent birds and from four to six dark juvenal birds. The young birds taken on July 9 and 10 at Paradise Park were still dark, while those from the Bald Mountains taken on July 16 and 17 were much lighter in color, although still showing a little of the dull gray of the juvenal plumage. The birds were numerous in the high-altitude coniferous forests and a flock could be seen or heard in the forest at almost any daylight hour. Around camp the jays became very tame and came down for food that was offered them. A pair of these jays was seen at Moon Lake, forty miles north of Duchesne, altitude 9500 feet, in the Uinta Mountains. On September 14 and 15, three jays were seen at Green Lake in the Uinta Mountains at an altitude

of 8000 feet. Here they had already descended to the yellow-pine forests. People who live the year around at Green Lake report that these jays remain throughout the winter in this Yellow Pine Community. C. L. Hayward collected six specimens between July 11 and August 18, 1930, at Mirror and Tryol lakes, four and a half miles west of Mirror Lake, Uinta Mountains.

Cyanocitta stelleri cottami Oberholser. UTAH JAY.

Six specimens: Green Lake, Uinta Mountains; Uinta Canyon, twenty miles north of Roosevelt; and Indian Canyon, twenty miles southwest of Duchesne. The measurements of the Uinta Basin specimens compare favorably with those given by Oberholser (1937), except for the length of the middle toe without the claw, which is consistently longer (two to three mm.) than in those reported by him.

MEASUREMENTS IN MILLIMETERS

	Wing	Tail	Exposed culmen	Height of bill at base	Tarsus	Middle toe without claw
Uinta Basin						
Average ♂♂.	153.0	140.0	24.0	11.0	41.1	25.2
Range of measurements	148-160	135-152.4	28.7-31.2	10.3-11.9	39.0-43.9	24-27.0
Average ♀♀.	149.1	136.5	28.1	10.2	42.5	24.7
Range of measurements	147-151.2	133-140	28-28.2	9.6-10.8	42-43	23.5-26
<i>Oberholser</i>						
Average ♂♂.	150.7	137.6	28.8	11.0	43.8	21.6
Range of measurements	144-160	129-154	27-30	10.5-12	42-45.5	20-23.5
Average ♀♀.	148.6	137.8	27.5	10.6	44.1	21.3
Range of measurements	140-156	131-144	25-31	10-11.8	42-46	20-22

This jay was not abundant in the Basin. It occurred only in isolated bands or family groups. At Indian Canyon, twenty miles south of Duchesne, a single pair was seen on June 19. Six birds were observed at Green Lake, Uinta Mountains, on July 2. At least three of the number were fully developed but still in their immature plumage. These birds had traveled down from the lodgepole pines into the yellow pines, where they were feeding. Upon being disturbed, they became very wary, and flew into the lodgepole pines at higher altitudes.

This jay nests between altitudes of 8000 and 9500 feet in the mountains of the Basin from the middle of April well into June. In summer it ranges from the yellow pines and blue spruce to the Engelmann spruce-alpine fir forests and on up to timberline at 10,000 feet. Several were seen at the edge of timberline in the *Picea-Abies* Community at Paradise Park, Uinta Mountains. The first indication of its descent to lower levels was observed on August 28 in the Uinta Canyon. A single bird was seen about halfway up the canyon at 7500 feet. But farther up, at an altitude of 8000 feet, a great many of these jays were observed in places where stands of aspen began to appear.

***Aphelocoma californica woodhousei* Baird. WOODHOUSE JAY.**

Four specimens: Blue Mountain, 8000 feet; Hill Creek, forty miles south of Ouray; twenty miles north of Vernal; Dry Fork, ten miles northwest of Vernal. This jay was a resident of the mountains of the Basin, being particularly numerous in the Uinta and Book Cliff mountains. Birds were seen in the Juniper forests near the Yampa River about six miles north of Elk Springs, Colorado, July 24; at Beaver Creek, seven miles northwest of Ladore, Moffat County, Colorado, July 25; and in the junipers along the road between Ladore and Graystone, Colorado, on July 27. No nests were observed, but fully grown juvenal birds were seen, and one was taken at Brush Creek, twenty miles north of Vernal, on June 29. A female taken at this date was in advanced molt. During the first week of May, several individuals of this species were observed flying over the Ashley Creek marshes. However, by the middle of May and up until September, they were seen only in the forests and canyons at altitudes between 6500 feet and 8500 feet. It was a fairly common occurrence in September to see these birds in the river and creek bottoms of the Basin and in the general vicinity of the Ashley Creek marshes.

***Pica pica hudsonia* Sabine. AMERICAN MAGPIE.**

Three specimens: twelve miles east of Vernal; and two miles south of Jensen. The magpie was a very common summer resident of the Basin, confining its nesting activities to the dense willow and cottonwood growths of the river and creek floodplains. In the vicinity of the Ashley Creek marshes at least thirty pairs of magpies nested. The greatest concentrations were in the farming districts, where there was an abundance of food. Three pairs were seen on the high plateaus of Blue Mountain at an altitude of 8000 feet on June 26; two pairs were observed at Green Lake, Uinta

Mountains, at an altitude of 8000 feet, on June 30, but for the most part these birds preferred the valleys at lower altitudes.

***Corvus corax sinuatus* Wagler. AMERICAN RAVEN.**

These birds are residents of the Basin, but they are much scattered in their distribution. From fifteen to twenty individuals were seen in the general locality of Strawberry Reservoir and ten were seen at Hill Creek, forty miles south of Ouray. Old nests were seen at Strawberry Reservoir on the face of a large cliff that faces the northeastern side of the Reservoir. Residents of the district report that several pairs nest here each year. Rasmussen (1938, p. 863) found that the ravens at Strawberry Reservoir were responsible for a certain amount of predation. At least seven nests of the Sage Grouse were destroyed by ravens.

***Corvus brachyrhynchos hesperis* Ridgway. WESTERN CROW.**

Crows were numerous during migration along the Green River Valley. A few remained to nest in the Basin; six nests were known to be occupied in the general vicinity of the Ashley Creek marshes. The birds were rather scarce as summer residents.

***Cyanocephalus cyanocephalus cyanocephalus* (Wied). PIÑON JAY.**

Five specimens: near Jensen; Beaver Creek, Colorado, 6000 feet. In early May the Piñon Jay was frequently seen along the Green River valley, but by the first of June the birds were found only in the Juniperus-Pinus forests of the Basin. These forests are located within the approximate altitudes of 5500 to 7000 feet on the south slope of the Uinta Mountains, and 6000 to about 7500 feet on the Tavaputs Plateau (Graham, 1937). In the forests the juniper (*Juniperus utahensis*) is the dominant species, while the pinyon (*Pinus edulis*) is of secondary importance. From the time of nesting in early June until the young were able to fly in July, the jays were seen only in pairs or as single individuals. However, by the middle of July family groups were observed frequently as they passed through the juniper forests. At Beaver Creek, two miles northwest of Ladore, Moffat County, Colorado, from July 25 to 27, large flocks of from fifty to one hundred and fifty jays were seen feeding along the steep juniper-covered hillsides. Again, on July 27, on the highway between Ladore and Graystone, large flocks were feeding on the sagebrush flats that bordered the Juniperus-Pinus forests. During September several small flocks of from twenty-five to thirty jays were recorded along Green River. The

ranchers said that these jays spend the winters in the lower-altitude creek and river valleys.

***Nucifraga columbiana* (Wilson). CLARK'S NUTCRACKER.**

One specimen: Green Lake, Uinta Mts. These birds were surprisingly scarce in the mountains bordering the Basin. The Uinta range that forms the northern boundary of the Basin was the only place where the birds were seen, and here they were observed only at Green Lake and at Paradise Park. Two birds were seen at Paradise Park, Uinta Mountains, altitude 8500 feet, on July 8. At Green Lake, Uinta Mountains, from four to fifteen birds were seen on June 10, between June 29 and July 5, and September 11 and 15. On the June 10 trip, a small flock of ten birds passed over the yellow pine forest, but they were very wary and would not allow a close approach. From June 29 to July 5, single birds and pairs were heard calling from some of the tall pines during the early morning, but they were very difficult to approach, remaining motionless and flying out at the opposite side of the dense canopy of the pine branches whenever they saw me walking toward them. On the September 11 to 15 trip only a single bird was observed.

***Penthestes atricapillus septentrionalis* (Harris). LONG-TAILED CHICKADEE.**

Sixteen specimens: near Jensen; two miles south of Jensen; five miles south of Heber; Yampa River, eight miles north of Elk Springs, Colorado; Uinta Canyon, twenty miles north of Roosevelt. These chickadees were not so plentiful in the Basin as might have been expected. During the early spring and late fall they could be found at lower levels, particularly along the larger river and creek valleys. In the Basin they nested at any place where there was a good cover of willows or aspens, the altitudes ranging from 6500 to 9000 feet. Small families of four or five birds were seen traveling along the creek valleys on July 4 near the Yampa River, eight miles north of Elk Springs, Colorado, and in Uinta Canyon, twenty miles north of Roosevelt, on August 25. The adults were busy feeding young that were just able to fly. By the first week of September, the chickadees began to appear in small family groups at lower elevations, particularly along the Green River valley and the floodplains of the other larger rivers and creeks of the Basin. Resident ranchers and farmers along the Green River reported that these birds are found here throughout the

winter months. A. C. Lloyd collected four specimens on August 24, 1935, in the vicinity of the Ashley Creek marshes.

***Penthestes gambeli gambeli* (Ridgway.) MOUNTAIN CHICKADEE.**

Nineteen specimens: Green Lake, Uinta Mts.; Indian Canyon, twenty miles southwest of Duchesne; Paradise Park, Uinta Mts., 10,050 feet; Florence Canyon, seventy-five miles south of Ouray; Hill Creek, forty miles south of Ouray; Uinta Canyon, twenty miles north of Roosevelt; Moon Lake, forty miles north of Duchesne. The Mountain Chickadee is a resident of the Basin, nesting in large numbers at the higher altitudes of the mountains from 8000 feet to timberline, which in most places reaches 10,000 feet. At Green Lake, Uinta Mountains, on June 10, only a few scattered groups of two or three were seen feeding high up in the yellow pines; but at this same locality on July 1 the birds were numerous, and families of from four to six birds were often seen. The adults were feeding the fully developed juvenal young. At Paradise Park, Uinta Mountains, from July 7 to 10, these family groups were very common and could be seen in considerable numbers in the forest. They remained near the mountain tops even in the fall, when the coming of the first snows to the high mountains drove many of the alticoline summer residents to low elevations.

***Baeolophus inornatus griseus* (Ridgway). GRAY TITMOUSE.**

Two specimens: Cottonwood Springs. These birds were rare in the Basin; only two families, of five and seven birds respectively, were seen on June 28. A male and a female were taken, but the others disappeared at once into the dense growths of the forest. This locality, at an altitude of 6600 feet, was in a very well-developed *Juniperus-Pinus* Community. When first detected, the birds were making considerable noise. The male whistled at frequent intervals as the group passed down a small valley. They hunted food close to the ground, often dropping down to scratch about among the shrubs.

† ***Sitta carolinensis uintaensis* subsp. nov. UINTA NUTHATCH.**

Type: Carnegie Museum, no. 121,558, adult male; Green Lake, forty miles north of Vernal, Uinta Mountains (altitude 8000 feet), Utah; July 1, 1937; collected by Arthur C. Twomey.

Subspecific characters: Similar to *Sitta carolinensis nelsoni* but throat and breast white. White on sides of head and neck extensive, spreading to sides of nape and back. Fawn-color of flanks and abdomen of juvenal

birds much more extensive than in juvenal birds of *nelsoni*. A more pronounced fawn-color in flanks of adults, and a less rich brown on abdomen than in *nelsoni*. In most specimens, the white of the second and third rectrices extends to the tip, while the dark spot is greatly diminished or is entirely wanting. The bill of *uintaensis* is blunt and only slightly tapered from the ramus to the tip, while in *nelsoni* it is more slender and sharply tapered from the ramus. Similar also to *Sitta carolinensis aculeata*, but whiter on throat and breast. The bill of *aculeata* is the same in length, but narrower and more sharply pointed:

	Exposed culmen	Length of gonys	Width of bill beyond ramus
<i>S. c. uintaensis</i> :			
average, 4 ♂♂	20.0	13.9	2.5
" 2 ♀♀	19.0	13.0	2.5
<i>S. c. nelsoni</i> (topotypical):			
average, 3 ♂♂	18.1	12.5	2.0
" 1 ♀	17.0	11.8	2.0
<i>S. c. aculeata</i> :			
average, 5 ♂♂	20.0	14.3	2.0
" 2 ♀♀	20.0	14.0	2.0

Range: From an altitude of 8000 feet in the Aspen, Lodgepole Pine and Yellow Pine communities to 10,000 feet in the Spruce-Fir Community of the Uinta Mountains of northeastern Utah.

Remarks: *Sitta carolinensis aculeata* is widely separated from the Uinta form. *Sitta carolinensis nelsoni* nearly encircles *uintaensis*, since specimens from Arizona, New Mexico, Colorado, and Texas, agree with *nelsoni*. From the evidence at hand, it seems that the form is restricted to the Uinta Range. Further work in southwestern Wyoming and northwestern Colorado would no doubt throw additional information on the distribution of *uintaensis*.

Although this nuthatch was found nesting, it was not uniformly distributed over the mountains of the Basin. At Green Lake, in late June and early July, the nuthatches were flying about in family groups, usually a pair of adults and from three to five immatures. They were most numerous in the Aspen-Yellow Pine Community at 8000 feet. Family groups were recorded on July 20 at Mirror Lake, altitude 10,000 feet, in the Picea-Abies Community. On August 29, in Uinta Canyon, altitude 7800 feet, these nuthatches were plentiful in the transition between the Lodgepole Pine and Aspen communities. The last seen in 1937 were at Green Lake during the middle of September. They were still in family groups and were feeding about the trunks of the yellow pines. Ridgway (1873a)

found the White-breasted Nuthatch to be rare on the Wasatch and Uinta mountains.

***Sitta canadensis* Linnaeus. RED-BREASTED NUTHATCH.**

Six specimens: Green Lake, Uinta Mountains; Moon Lake, forty miles north of Duchesne. This nuthatch was first observed in the Yellow Pine and Aspen communities at Green Lake, Uinta Mountains, on June 30. At this time only three birds were seen, but upon returning to the same locality at the end of June, I observed two family groups in the yellow pines. An immature individual, from a family of three young and two adults, was collected on July 1. This nuthatch was not seen again until August, when a male was collected at Moon Lake, forty miles north of Duchesne. No other individuals of this species were listed at that time. A male was collected at Green Lake, Uinta Mountains, on September 11, but it was the only one seen. There was never an indication that there was a migratory movement of this species in the Basin, except on September 30, when a single bird was recorded in the dense willows near the junction of Ashley Creek and the Green River on the Green River floodplain, two miles south of Jensen.

***Sitta pygmaea melanotis* van Rossem. BLACK-EARED NUTHATCH.**

Three specimens: Green Lake, Uinta Mountains. The only nuthatches observed were two bands feeding in the crowns of the tallest yellow pines at Green Lake on June 30. There were five in one group and twenty in the other. They were very shy and flew off down the mountainside upon my approach. These birds undoubtedly nested in the general vicinity, and the young which had left their nests probably made up the small bands of nuthatches seen on June 30. Every day from September 11 to 15, small groups of from five to fifteen birds were seen working over the high crowns of the yellow pines.

***Certhia familiaris montana* Ridgway. ROCKY MOUNTAIN CREEPER.**

Five specimens: Green Lake, Uinta Mountains; Indian Canyon, twenty miles southwest of Duchesne; Uinta Canyon, twenty miles north of Roosevelt. A male (no. 121353), collected on June 10 at Green Lake, is in full plumage that shows no sign of wear. The dorsal surface has a decided grayish wash. The rumps of all the Uinta Basin birds are lighter than those of topotypical specimens from Mt. Graham, Arizona. This creeper was not found in large numbers. One or two birds would be encountered

whenever we worked through the Lodgepole Pine and the *Picea-Abies* communities of the high mountains. Immature birds, usually in family groups of five individuals, were observed at Uinta Canyon, twenty miles north of Roosevelt, on August 29.

***Cinclus mexicanus unicolor* Bonaparte. DIPPER.**

The dipper was not found in large numbers, although there were from two to four birds to every mile or so of the swift mountain streams. They were observed to be most numerous along upper Ashley Creek, from the junction of Whiterock and Uinta rivers to the end of the Uinta Canyon road, below Moon Lake on the West Fork River, and along the Provo River below Heber.

***Troglodytes aedon parkmani* Audubon. WESTERN HOUSE WREN.**

Twenty specimens: twelve miles east of Vernal; twenty miles southwest of Duchesne; Green Lake, Uinta Mountains; and Ouray. Both the breeding and migrant forms of the House Wren found in the Basin are of this subspecies. The following measurements compare with those of Oberholser (1934) as follows:

		Uinta Basin		Oberholser (1934)		
		Average	Max. Min.	Average	Max. Min.	
Male:	wing	52.2	54.5—50.0	Male:	51.3	53.5—49.5
	tail	46.0	48.5—43.5		44.2	45.5—42.0
	culmen	12.9	14.9—11.2		12.4	13.5—11.5
	tarsus	17.2	18.0—15.9		17.0	17.5—16.5
	mid. toe	11.3	12.0—10.5		12.2	13.0—11.0
	without claw					
Female:	wing	51.3	52.0—51.0	Female:	51.0	52.3—49.0
	tail	44.3	45.0—44.0		44.8	47.0—42.0
	culmen	13.0	14.0—12.0		11.7	12.7—11.0
	tarsus	16.6	17.1—16.2		16.8	18.0—16.0
	mid. toe	11.5	12.0—11.0		12.1	13.0—11.0
	without claw					

The house wrens were particularly common along the drainage systems of the Basin from the lowlands to timberline in the mountains. The lowland specimens were very light grayish birds and seemed pallid in contrast with the higher-altitude specimens, which were much darker; the latter were brownish above and buffy below. These wrens were first seen in the Basin on May 1, and from that date until the end of September, they were always in evidence throughout the area.

Telmatodytes palustris plesius (Oberholser). WESTERN MARSH WREN.

Four specimens: two miles south of Jensen. Marsh wrens were encountered only at the Ashley Creek marshes, where a few birds nested. On several occasions they were heard singing along the west end of the marsh. The birds collected were taken at the edge of the rushes along the west side of the marsh on September 22, 29, and 30.

Catherpes mexicanus conspersus Ridgway. CAÑON WREN.

Three specimens: Hill Creek, forty miles south of Ouray. This wren was restricted in its distribution in the Uinta Basin but was found along the deep canyon walls of Hill Creek. The birds were numerous, with from three to four pairs for every large precipitous rocky face. They were shy and remained on the edges of the loftiest crags, from which they would sing loudly. At a locality on Hill Creek, about forty miles south of Ouray, the stream valley averaged a half-mile or more across, with cliffs running from fifty to two hundred feet high on either side. Lateral canyons came down to the river, cutting the cliffs into rugged formations at many points. This was the ideal environment for these wrens. Here, on the badly broken rock walls, a pair of wrens, with from four to six fully developed young, was seen during a visit from August 5 to 7. But upon my close approach, they vanished quickly into the cracks and crevices. In a few moments the adults reappeared, scolding from the crest of a nearby cliff. After the disturbance was over the male started its rambling song, to be joined shortly by another male on the high cliffs nearly half a mile away on the opposite side of the river. This behavior was characteristic, recurring every time we appeared on the scene.

Salpinctes obsoletus obsoletus (Say). ROCK WREN.

Twenty-three specimens: six miles, and five miles, north of Jensen; near Jensen; five miles south of Jensen; fifteen miles southwest of Vernal; twenty-five miles east of Vernal; eight miles west of Vernal; twelve miles southwest of Vernal; Hill Creek, forty miles south of Ouray; Green Lake, Uinta Mts.; and Bald Mt.

Uinta Mts.; and Bald Mt.				Wing	Tail	Cul.	Tarsus	Mid. Toe
121589	♂	July 13	Green Lake, Uinta Mts.	68.3	49	19	21	14
121967	♀	Sept. 13	"	71.0	54.5	17	20.5	13
121968	♂	Sept. 13	"	70.0	52	16	20	13

The above three specimens were taken at 8000 feet in the yellow pine forest. The two fall specimens appeared dark over the whole of the dorsal

surface, because of their dark gray ground-color. The spots that extend from the base of the bill over the back were reduced more than in comparable birds from the desert. The single (July 3) breeding specimen was quite worn, but showed the light warm buff shades that are characteristic of the lower-altitude forms. The three specimens show a distinct light buffy wash over the breast and belly. The measurements, however, fall within the limits of true *obsoletus*.

The rough rocky "bad lands" of the Basin and arid slopes of the river systems would be truly barren were it not for the almost continuous clear, rambling song of this wren. Here, where but few other birds can nest, the Rock Wren makes its home. In late June, even on the hot, parched desert, a nest of from five to seven young would often be uncovered beneath a flat shelving rock along the bank of a dry wash. These were often in exposed locations, where the young were subjected to high temperatures. Nests were most numerous in the semi-arid and arid deserts of the Basin, decreasing in numbers as the altitude increased. At altitudes of 8000 feet, such as at Green Lake, and at Mirror Lake (10,000 ft.), a few individuals were seen along the lower rock slides where they had nested earlier in the summer.

***Mimus polyglottos leucopterus* (Vigors). WESTERN MOCKINGBIRD.**

One specimen: Powder Springs, twenty miles east of Vernal. The Mockingbird was an uncommon bird in the Basin. Two were observed at Cottonwood Springs on June 14, and a bird in juvenal plumage was taken at Powder Springs on August 23. This young bird was accompanied by three other juvenal birds and the two parents, which were shy and retreated into the dense junipers. The two localities above were similar in that they were at the lower edge of the juniper forest. Although such locations were numerous in the Basin, no other individuals of this species were observed in 1937. A. C. Lloyd in 1935 discovered a mockingbird in the vicinity of the Ashley Creek marshes during the latter part of May. LeRoy Kay told me of seeing one or two pairs at Horseshoe Bend on the Green River on several occasions during the past ten years.

The status of the Western Mockingbird in Utah is of interest. Tanner (1936) found the species to be scattered in its distribution in Utah. In the Virgin River valley around St. George, it is a common bird of the low deserts and river bottoms. In October, 1937, the author found the bird abundant at St. George. In the northern part of the state this species is very scattered. Three sets of eggs were taken just north of Utah Lake in

1936. Tanner (1936) points out that the whole of the northeastern part of the state is without a record. The present establishment of the Mockingbird in the Uinta Basin extends its range to the extreme northeast corner of Utah.

Dumetella carolinensis (Linnaeus). CATBIRD.

Eight specimens: two miles south of Jensen, and twelve miles east of Vernal. Catbirds were numerous during the spring migration, May 10 to May 25, in the vicinity of the Ashley Creek marshes. After the first week of June, at least four pairs nested in the dense thickets near the marshes. Along the dense willows that skirt the east river bank of the Green River, almost opposite the mouth of Ashley Creek, two pairs were observed feeding young on August 9. In 1934, A. C. Lloyd did not record the Catbird for the Ashley Creek marshes, but in 1935 he found it common at certain points in the woods about the marshes. On August 5, 1935, he collected a juvenal female at the marshes.

Oreoscoptes montanus (Townsend). SAGE THRASHER.

Twenty-one specimens: near Jensen; twelve miles southwest of Vernal; east slope Blue Mountain, 7000 ft.; fifteen miles south of Vernal; and Cottonwood Springs. Sage thrashers were found abundantly over the lowlands of the Basin. They had arrived in large numbers by May 1, and they began to nest almost at once. The first nest with two eggs was found on May 14 in a dense growth of greasewood (*Sarcobatus vermiculatus*) two miles south of Jensen. On May 25, a nest with four heavily incubated eggs was found again in a greasewood thicket. Young thrashers were encountered about the first of June and were recorded until well into August.

The Sage Thrasher had a wide range in the Basin, although it was discontinuous at certain elevations. It extended from the lowest elevations at 4500 feet upward to elevations of 6000 feet, where it would follow the complex Desert Shrub communities part way up the deep canyons. This thrasher also nested in large numbers in at least two localities at an elevation of 8000 feet in the mountain sagebrush: the Blue Mountain plateau and the high plateau at the head of Florence Canyon. The first indication of a movement in the Sage Thrasher population was noticeable the first week of September. With the coming of cold nights the thrashers suddenly began to disappear. By the last of September they had nearly all moved out of the Basin.

Turdus migratorius propinquus Ridgway. WESTERN ROBIN.

Twelve specimens: near Jensen; twenty miles southwest of Duchesne; Bald Mt., 10,500 ft., twenty-five miles northeast of Kamas, Wasatch Co.; Uinta Canyon, twenty miles north of Roosevelt; Green Lake, Uinta Mts., forty miles north of Vernal; and Indian Canyon. The robins already had arrived in the Basin by May 1 and were particularly abundant along the Green River around the Ashley Creek marshes and along the other watercourses. Although the main population moved on, six pairs remained and nested at Ashley Creek marshes after May 20. Later, during trips to the various mountain ranges, robins were found to be abundant above an altitude of 8000 feet. They increased in numbers up to timberline, which ran from 9500 to 10,000 feet. At these high altitudes, nests with fresh eggs were observed as late as July 16 on Bald Mountain. In the same locality fully developed juvenal birds were seen. Both adults and young were seen by August 25 in flocks of from ten to twenty-five individuals along the watercourses of the Basin. During the last two weeks of September, large numbers, apparently moving down the river, appeared along the Green River valley. Robins were observed by A. C. Lloyd to be very common as spring and fall migrants and as summer residents along Green River in 1934 and 1935.

Hylocichla guttata auduboni (Baird). AUDUBON HERMIT THRUSH.

Fourteen specimens: near Jensen; twenty miles southwest of Duchesne; Green Lake, Uinta Mts.; Paradise Park, Uinta Mts.; Bald Mt., Uinta Mountains; and Moon Lake, forty miles north of Duchesne.

					Wing	T.	Tar	Cu.	M.T.
121423	♂	June 18	20 miles s. w. of Duchesne		99.7	71	27.9	15.2	17.2
121422	♀	" 20	"		97.2	70	29.2	15.2	16
121443	♂	" 20	"		103	76	28.1	14.9	16.5
121575	♀	July 3	Green Lake		101.2	69	29	15.5	17
121653	♀	" 10	Paradise Park		96	71	27.2	15.2	15.2
121636	♂	" 8	"		106	79.9	28.8	15	15.2
121681	♂	" 16	Bald Mt.		99.4	74	28	15	15
121682	♂	" 16	"		103.4	78	29	15	16.2
121998	♂	Sept. 14	Green Lake		105.5	72	30	14	16.5
121965	♂	" 11	"		100.5	69	28.5	13	17
121984	♂	" 14	"		103	72	28.3	13.8	17

Two young birds, 121703 and 121721 (not listed above) taken at Bald Mountain, altitude 10,500 feet, twenty-five miles northeast of Kamas,

Wasatch County, on July 17 and 19 respectively, were very gray. Both were about half grown, the rectrices just beginning to develop. The backs have a gray wash that tends to subdue the light rufous mottling. They appear in sharp contrast to the rufous wash of the young of *guttata* and the very rich rufous of *nanus*. The ventral surfaces of the young of *auduboni* and of *guttata* are similar, both having a slightly flecked throat, a heavily mottled grayish black upper breast with a light tan wash over all. The lower breast and bellies of both are grayish white with faint gray lateral pencillings. The young of *nanus* is as heavily mottled over breast and throat, but has heavier marks on the belly with a tan wash over the whole ventral surface. Specimen 121873 was taken at Moon Lake, Uinta Mountains, forty miles north of Duchesne, on August 20. This bird is in almost perfect first winter plumage; a few juvenal feathers still persist as warm buff flecks over the nape, back, and upper wing-coverts. The belly retains a few fine lateral marks.

During May these thrushes migrated along the Green River valley, stopping to feed only in the most dense vegetation. After the migration period they were very common in the upper coniferous forests of the high mountains of the Basin. The birds were first heard singing in their nesting grounds at the edge of the aspens, altitude about 7500 feet. From here on up into the lodgepole pines the birds became more numerous until, reaching the Engelmann spruce-alpine fir forests, Audubon hermit thrushes could be heard singing from every quarter. In these dense forests they built their nests, and although they were ever wary, their melodious songs signified that the birds were plentiful. The first to be seen in the fall migration was in late September along the valley of the Green River just below Jensen.

***Hylocichla guttata oromela* Oberholser. CASCADE HERMIT THRUSH.**

One specimen: twelve miles east of Vernal. This specimen, a male, number 121111, was collected on May 7. It measured, wing—91, tail—65, tarsus—30, exposed culmen—12.5, middle toe without claw—17 as compared to the average measurements of *oromela*, Oberholser (1932), wing—88.9, tail—66.7, tarsus—28.9, exposed culmen—12.7, middle toe without claw—16.1. The measurements of this specimen fit into the limits set for *oromela*. It is of the gray phase and in details is similar to comparable specimens of *oromela*. The bird was a migrant, passing along Green River valley at the height of the spring migration. This subspecies

may have been more common, although only this one specimen was collected. It was migrating with numbers of *Hylocichla guttata auduboni*.

***Hylocichla ustulata swainsoni* (Tschudi). OLIVE-BACKED THRUSH.**

One specimen: two miles south of Jensen, May 29, 1935. This specimen was collected by A. C. Lloyd and is now in the Royal Ontario Museum collection. Ridgway (1877) found this thrush nesting in considerable numbers on the east slope of the Wasatch Mountains below the pine region. A nest with four eggs was collected at Parley's Park (Wasatch Mountains) on June 23, 1869. This thrush was not observed on the slopes of the Uinta Mountains in 1937.

***Sialia currucoides* (Bechstein). MOUNTAIN BLUEBIRD.**

Eleven specimens: Green Lake; Ashley Canyon; Bald Mt.; near Jensen; and nine miles west of Vernal. At the mouth of Ashley Creek, where it enters Green River, a few scattered individuals were seen during May, but they gradually disappeared until by the first of June all had left. A pair was seen feeding at the edge of the Juniperus-Pinus Community along the road, nine miles west of Vernal, near Cottonwood Springs, on June 14. They were shy and could not be approached easily. Four days earlier (June 10), at Green Lake in the yellow pines, bluebirds were plentiful; three nests were found, all containing young that had hatched recently. On a later trip to Green Lake (June 20), fully developed young were flying about with the adult birds in early family groups.

The mountain bluebirds were most abundant at altitudes between 8000 and 10,000 feet, which means, in vegetational communities, from the yellow pines to the sub-alpine regions of Engelmann spruce and alpine fir. By the middle of July, the birds became more numerous in the junipers and pinyons but did not reach the lower river valleys until the first week of September. After September 1, bluebirds appeared along Ashley Creek and the Green River valley in flocks of from ten to twenty-five individuals; many of them could be distinguished as young birds by their thin mottled plumage. During this period bluebirds were found moving down the slopes in all of the valleys and canyons, that broke off sharply to the lower plains of the Basin. They were feeding as they traveled, stopping on high, dead bushes to watch for flying insects. These birds were still fairly plentiful in the Basin on September 30. Their residence in the Basin

after this late date was no doubt short, for by early October snows were already covering the high mountains.

Myadestes townsendi (Audubon). TOWNSEND SOLITAIRE.

Eight specimens: two miles south of Jensen; Green Lake, Uinta Mts.; and Paradise Park, Uinta Mts. At the Ashley Creek marshes a few scattered birds passed through between May 15 and 20. They were following the dense willow and cottonwood groves of Green River, moving up the river into the high mountains. On June 10, at Green Lake in the Uinta Mountains, three pairs were seen feeding among the yellow pines; usually they could be found perched on a dead branch between ten and twenty feet from the ground overlooking a clearing in the forest. From these points of vantage they would fly out in pursuit of insects, frequently following larger forms to the ground, where they would often remain long enough to eat them. A female collected on June 10 had very large ovaries, which indicated that the bird had already started to lay or was on the point of laying. Later, on July 1, a pair was collected and again the ovaries of the female were very large, with one egg in the oviduct encased within the egg membrane. One other individual was observed, but it was extremely shy and could not be approached. A female was taken on July 2 at Paradise Park, Uinta Mountains, at the edge of an alpine meadow in the spruce-fir forests. This individual had a brood-patch which was wrinkled and fatty, indicating that the bird had young. A second bird in the same locality, probably the male, was wary, showing considerable interest in us, but flying the moment it was approached.

On July 17, on Bald Mountain, twenty-five miles northeast of Kamas, Wasatch County, a pair with four young birds was seen following the rim of a high canyon wall. They kept moving along, hesitating only a moment, and then disappeared over the canyon rim. A single bird was seen at Florence Canyon, seventy-five miles south of Ouray, on July 29. On August 20, two were observed at Moon Lake, forty miles north of Duchesne, in the pine-aspen transition at an altitude of 4500 feet. Later, while at Green Lake on September 15, two groups of six birds each were seen feeding in the sagebrush (*Artemisia tridentata*) in the openings among the yellow pines. A male, which was collected, was almost in its full adult plumage but showed on the belly and lower breast a few mottled feathers, the remnants of its juvenal plumage. During September the solitaires were seen singly or in pairs along the cottonwood floodplains of the Green River, where they rested and fed during their southward migration.

Poliophtila caerulea amoenissima Grinnell. WESTERN GNATCATCHER.

One specimen: two miles south of Jensen. A. C. Lloyd collected this specimen, which is in the Royal Ontario Museum of Zoology, on May 20, 1935. On May 27, 1937, the author observed a pair in a dense stand of junipers at the edge of a small semi-arid valley, one-half mile west of the Dinosaur National Monument. The birds became very much excited while we were in the vicinity, but a nest was not located.

Corthylio calendula cineraceus (Grinnell). WESTERN RUBY-CROWNED KINGLET.

Four specimens; three miles south of Jensen; and near Jensen. This species was a common migrant along the lowland valleys of the Basin during the spring and fall. The first seen were in small flocks of from ten to thirty individuals in the vicinity of Ashley Creek marshes on May 3. These migrants were most numerous along the dense willow thickets of the Green River floodplains. At all points in the mountains of the Uinta Basin, from the altitude of the lodgepole pines to the spruce-fir forests, these kinglets nest commonly during the summer. The greatest concentration always was found in the spruce-fir forests, where their rambling song could be heard from the time of their arrival until their departure.

The main spring migration reached its peak on May 7, the last transient individuals being observed on May 29. By June 10, when the first trip was made into the mountains at Green Lake, the kinglets were already very active and could be heard singing in all parts of the forest. At Indian Canyon, twenty miles southwest of Duchesne, a pair was observed carrying nesting material on June 18, but the birds disappeared into some tall pines and were not located again.

From July 7 to 10, at Paradise Park, Uinta Mountains, in the lodgepole-pine-spruce forests, this kinglet occurred in the largest concentration of any place visited in the Basin. Two nests were located in a dense stand of Engelmann spruce. Here they were well protected in the top of the dense spruce crown, and attempts made to reach the nests met with no success. The adults were observed later feeding young. On August 21, at Moon Lake, in a mixed stand of aspen and pines, small family groups of from six to eight individuals were feeding throughout the forest. The adults were still feeding fully developed immature birds. In the fall, the first birds to appear in the lower stream valleys arrived in early September, and reached the peak of their fall migration by September 22. By Sep-

tember 30 there was already a noticeable decrease in the migration along Ashley Creek and the Green River valley. On September 20 snow began to fall on the upper altitudes, reaching down to about 7500 feet. This sudden change probably was responsible for the fall migration peak coming on September 22, just two days after a mountain storm.

***Anthus rubescens alticola* Todd. ROCKY MOUNTAIN PIPIT.**

Fifteen specimens: Paradise Park, Uinta Mts.; and Bald Mt. Numbers 122003, 122005, and 122006 are fall birds taken at an altitude of 8000 feet at Green Lake. They showed an early development of the fall plumage, having heavily blotched breasts and flanks in contrast to the spring plumage, which is buffy and shows a decided reduction in the markings on the breasts and flanks.

During the early weeks of May, pipits were seen in flocks of from ten to twenty, feeding along the mud flats of the Ashley Creek marshes or next to the water along the banks of the Green River. By May 27, no more pipits were seen in the lower country of the Basin. In June these pipits were found breeding in the Uinta Mountains in the upper alpine meadows at an altitude of 10,000 feet. The two places where they were observed were Paradise Park, Uinta Mountains, and Bald Mountain, twenty-five miles northeast of Kamas. In both localities these birds were nesting in large numbers. Their nesting sites were on the alpine meadows above timberline or in the lower meadows of the spruce-fir forests. A prerequisite was the sloping shore of a lake or stream, and there, under the edge of a stone or sod clump, they constructed their nests. The nests were made of coarse grass and lined with very fine grasses. On the meadows in the spruce-fir forests at Paradise Park from July 7 to 10, nests were found about every two hundred yards, twenty-five to fifty yards back from a pond or small stream under the edge of rocks. Fifteen nests were found; ten had young that had just hatched, while the remainder contained eggs that were on the verge of hatching. From July 16 to 20, at Bald Mountain, pipits were found nesting in comparatively large numbers on the alpine meadows just above timberline, at an altitude of 10,500 feet. Here twelve nests were located, each under the edge of a boulder and up to fifty yards from the nearest pool. All the nests found contained young birds, which had not been hatched more than three or four days.

In both nesting localities, the males frequently were seen flying to heights of from three to five hundred feet, from which they could be heard singing. The singing was generally carried out some place above the

general vicinity of the nest. Both birds helped with the feeding of the young, going to the edge of the pools, where they walked about searching for adult midges and diptera. Then, with bills crammed to capacity, they would fly quickly to the nest and feed their young.

At Green Lake (altitude 8000 feet) on September 15, pipits were observed feeding on some of the lower meadows among the mixed yellow pine, lodgepole pine and aspen forests. The flocks were small, numbering from four to six individuals, probably representing family groups since the larger number in each flock was of immature birds. These flocks were, no doubt, the forerunners of larger migrating flocks. By September 20 a few individuals were seen along the muddy shore of the Ashley Creek marshes. On September 29, the first large flock of between forty-five and fifty birds flew over my camp at Ashley Creek.

***Lanius ludovicianus excubitorides* Swainson. WHITE-RUMPED SHRIKE.**

Four specimens: twenty-five miles south of Ouray; twenty-five miles east of Vernal; and fifteen miles southwest of Vernal.

	Uinta Basin	<i>excubitorides</i>	Miller (1931) <i>nevadensis</i>	<i>gambeli</i>
Wing.....	102	99.92	100.22	99.62
Tail.....	96	100	102.42	102.26
Amount of white on outer rectrix in per cent of length of tail.....	31.5	42.1	33.3	30.5
Culmen from nostril.....	12	11.32	12.1	11.94
Width of bill.....	7	5.92	6.02	6.17
Depth of bill.....	9	8.24	8.35	8.37
Hind toe.....	10	10.13	10.03	10.11
Tarsometatarsus.....	27.9	27.4	27.22	27.39

Only measurements of males are included in the table. The characters in which the Uinta Basin birds are most nearly approached are italicized in the table.

The single adult male taken in the Uinta Basin is *Lanius l. excubitorides*. Comparisons were made with specimens of *excubitorides* taken at Davidson and Last Mountain Lake, Saskatchewan, Canada. The Utah specimen in question was in badly worn plumage, which may account for the darker gray back and flanks compared to specimens of *Lanius ludovicianus excubitorides*. Although the measurements of a single specimen can hardly be considered adequate, it is interesting to compare the measurements with those of Miller (1931) of typical *Lanius ludovicianus*

excubitorides, *Lanius ludovicianus nevadensis*, and *Lanius ludovicianus gambeli*. It becomes apparent that if these measurements are at all diagnostic, the bird in question is more than likely an intergrade, having qualities of all three forms, with a tendency toward *excubitorides*. Miller's map (1931) of the breeding ranges of *excubitorides*, *nevadensis*, and *gambeli* shows the Uinta Basin as a transitional zone where the three races are apt to meet.

A. C. Lloyd considered the White-rumped Shrike rare, for he saw only two or three birds in 1934 and 1935. On July 26, 1934, he collected an immature male twenty miles south of Vernal.

Vireo solitarius plumbeus Coues. PLUMBEOUS VIREO.

Four specimens: three miles south of Jensen; two miles south of Jensen; and eight miles west of Vernal. The males of this vireo were first heard singing in the dense willow, sycamore, and cottonwood floodplains of Green River valley on June 2. The birds, however, were exceedingly wary and were not easily located. On June 5 a male which had been heard singing from the dense crown of a large cottonwood tree, and a female, were collected on the east side of Green River, three miles south of Jensen. The female had a well-formed brood-patch, and the gonads of the male were in full breeding condition. This established the Plumbeous Vireo as a sparsely distributed summer resident of the watercourses in the Basin. Later, on June 8, a male was heard singing from some willows on the south side of the Ashley Creek marshes. After careful watching, I was able to detect the bird feeding in the dense foliage of the willows, fifteen to twenty feet from the ground. This male hunted along slowly, singing every half minute as he carefully scanned the underside of each leaf. A stir from my direction was always enough to make him fly thirty-five or fifty yards farther, where he would resume his feeding and singing. Although this individual was watched for fully an hour, he never gave any indication that a nest was nearby. A fourth bird was heard at Cottonwood Springs, eight miles west of Vernal, on June 28. This male suddenly began to sing in some dense willows close to the spring, but, although he was watched for some time, he never gave any indication of a nest. After this date I never heard this vireo's song, but three birds were seen feeding high up in some cottonwood trees four miles south of Jensen on August 9. This vireo then must be considered as fairly rare in the Basin; it nests only in very restricted areas in the lower valleys where it can find water and dense cover.

Vireo solitarius cassini Xantus. CASSIN VIREO.

One specimen: two miles south of Jensen. The Cassin Vireo occurred in the Basin as a rare migrant, but none was observed during the spring migration. Only one specimen was taken, on September 25, at the Ashley Creek marshes. This bird was seen in company with a flock of six pileolated warblers.

Vireo olivaceus (Linnaeus). RED-EYED VIREO.

One specimen: four miles south of Jensen. This bird was not abundant in the Basin during the spring and fall migrations. Only one specimen was taken. From May 29 to June 9, singing males were heard nearly every day. They were not observed again until from September 6 to 9. At this time the birds were seen along the Provo River, five miles south of Heber, where they were migrating through the Provo Canyon in large numbers. From September 20 to 28, they all had passed through on their way south.

Vireo gilvus swainsoni Baird. WESTERN WARBLING VIREO.

Eight specimens: five miles, and four miles, south of Jensen; Green Lake, Uinta Mountains; twenty miles southwest of Duchesne; Hill Creek, forty miles north of Duchesne; and Uinta Canyon, twenty miles north of Roosevelt.

The warbling vireos appeared at the Ashley Creek marshes on May 10. The birds were seldom seen, although males could be heard singing a great deal. They showed preference for the upper strata of leaves among the cottonwoods, where they might have been overlooked but for the song of the males. By May 18 they had become very scarce, and by the first of June they all had moved into the high mountains of the Basin.

The warbling vireos were found nesting throughout the Basin at altitudes between 7000 and 9000 feet. This represents the transition that exists between the Aspen and Sub-montane Shrub zone (Graham, 1937). Their nesting preference was for small aspen groves, such as are found at Green Lake, Moon Lake, Indian Canyon, Paradise Park, and Uinta Canyon. Great nesting activity was observed at Green Lake on June 10; males were singing from every aspen grove. Upon the second visit to Green Lake, June 29 to July 5, the warbling vireos were feeding young birds in the nest, and many were feeding fully grown young. Their singing was still persistent at this late date. At Parley's Park, Wasatch

Mountains, Ridgway (1877) found nests and eggs of the Warbling Vireo on June 23 and 26, 1868.

The month of September marked the fall migration, the largest numbers passing along the Green River valley and the Ashley Creek marshes between September 20 and 26. From September 11 to 15, however, when we were again at Green Lake, we noticed that small numbers of warbling vireos were still in the vicinity. The main population had already started their movement to lower altitudes in preparation for the southward migration.

***Vermivora celata celata* (Say).** ORANGE-CROWNED WARBLER.

Two specimens: Green Lake, Uinta Mountains; and two miles south of Jensen. This species was found in the Basin during the fall migration. At Green Lake, on September 13, a female was taken from a number of migrating warblers. Again, on September 29, a male was collected at the Ashley Creek marshes, just after the main warbler migration peak had passed.

***Vermivora celata orestera* Oberholser.** MOUNTAIN ORANGE-CROWNED WARBLER.

Six specimens: twenty miles southwest of Duchesne; Uinta Canyon, twenty miles north of Roosevelt; Green Lake, Uinta Mountains; and two miles south of Jensen.

The Uinta Basin birds have an average wing measurement of 65 mm. and tail length of 49.5 mm., which, when compared with measurements of *orestera*, *celata*, and *lutescens* (Oberholser, 1905), fit those recorded for *orestera*. (*V. c. orestera*: wing, 63.4, tail, 50.4; *V. c. celata*: wing, 61.4, tail 49.2; *V. c. lutescens*: wing, 59.6, tail, 46.9.)

The plumage of the Uinta Basin birds has more lemon-yellow throughout than that of *celata*, with a dark olive-yellow back tinged with gray. The lemon-yellow wash over the breast is not so bright as in *celata*, which has much more gray on the back, head, and breast. As a further comparison, the Uinta birds have a prominent yellowish green superciliary line over the eye, as should be present in specimens of *orestera*. From the above characters it is obvious that *orestera* is a distinguishable form, representing the breeding bird found in the mountains of the Uinta Basin. On May 10, four orange-crowned warblers were seen passing through the Basin at the Ashley Creek marshes, but none was collected. Later, on June 19, a single male in badly worn plumage was collected in a mixed

stand of lodgepole pine, Colorado blue spruce, and aspens in Indian Canyon, 7600 feet altitude. At first the bird was much excited and kept chirping loudly, but it soon lost interest and moved into a tall spruce where it began to feed. This individual, in breeding condition, had large and well-developed gonads. We spent five days at this locality, but this warbler was not seen again. On June 20, while at Green Lake, we heard a male singing from the top of a tall yellow pine, but the bird disappeared and was not observed again.

A male and two young were taken (August 29) in Uinta Canyon, twenty miles south of Roosevelt; the young had almost attained their adult plumage except for some gray mottled patches of the early juvenal plumage on the breast. The male was *orestera* in new fall plumage. This is the only actual evidence of breeding in the Basin, other than those records already mentioned of individuals seen in late June in typical nesting localities in the mountains of the Basin. By September 25 a few birds were seen in migration at the Ashley Creek marshes. One was collected on September 29 from a small flock of five birds which were feeding along a dense willow and cottonwood growth on the Ashley Creek floodplain just south of the marsh proper. Ridgway (1877) reported the Orange-crowned Warbler to be a common nesting bird of the Wasatch Mountains. He collected a bird in juvenal plumage and two adult males at Parley's Park, on July 17, and August 12 and 16, 1869.

***Vermivora ruficapilla ridgwayi* van Rossem.³ CALAVERAS WARBLER.**

Two specimens: Kamas; Soapstone, twenty miles southeast of Kamas. These specimens, nos. 891 and 1678 of the Brigham Young University collection, were taken by C. L. Hayward. The birds were migrants, for the Kamas bird was taken on September 21, 1930, and the Soapstone specimen on September 30, 1940.

***Vermivora virginiae* (Baird). VIRGINIA WARBLER.**

Three specimens: near Jensen; and Ashley Canyon, twelve miles north of Vernal. On May 5 three birds were seen in the vicinity of Ashley Creek marshes; one male was collected. One or two specimens were seen nearly every day until June 1. While on a trip on June 22, up Ashley Creek to a point twelve miles north of Vernal (where the river runs through

³A. J. Van Rossem proposed *Vermivora ruficapilla ridgwayi* nom. nov. to replace *Vermivora ruficapilla gutturalis* (Ridgway), preoccupied. Proc. Biol. Soc. Wash., 1929, vol. 42, p. 179.

a deep canyon), we saw several Virginia warblers. They were out on the floodplain in the dense mats of undergrowth, consisting principally of skunk bush (*Rhus trilobata*), rose bramble (*Rosa puberulenta*), western cottonwood (*Populus Sargentii*), and peach-leaved willow (*Salix amygdaloides*). Several birds were chirping loudly from a dense growth of rose brambles. They proved to be extremely wary and did not expose themselves for more than a second or two at a time. The two which were collected were both males; their plumage was still bright, although the ends of the feathers were worn. From the action of the birds and the lateness of the season, it would seem to be correct to assume that these warblers were nesting in the dense growths of vegetation along the upper Ashley Creek floodplains. Ridgway (1874) found the Virginia Warbler to be a common breeding form at Parley's Park, Wasatch Mountains, and at Pack's Canyon, Uinta Mountains, in 1869.

On September 20 a single bird, feeding with migrating flocks of other warblers, was seen along the dense willows of the Ashley Creek marshes. From this date to the end of the month, only one or two individuals at a time were observed as they passed through in migration. A. C. Lloyd reported having seen several in migration at the Ashley Creek marshes during the middle of May, 1935.

***Dendroica aestiva brewsteri* Grinnell. CALIFORNIA YELLOW WARBLER.**

Nineteen specimens: Vernal; two miles, and five miles south of Jensen; and Hill Creek, forty miles south of Ouray.

TABLE OF AVERAGE MEASUREMENTS

		Wing	Tail
<i>D. a. aestiva</i>	9 ♂♂	63.0 (67.5-61.0)	43.5 (46.0-40.6)
"	7 ♀♀	60.90 (62.5-59.3)	42.7 (46.9-39.0)
<i>D. a. rubiginosa</i>	7 ♂♂	62.50 (63.5-62.0)	43.3 (45.5-42.0)
"	4 ♀♀	59.90 (62.0-57.9)	42.5 (43.1-41.9)
Oregon & Cal.			
<i>D. a. brewsteri</i>	5 ♂♂	63.60 (66.20-61.30)	44.8 (47.8-42.6)
"	6 ♀♀	59.90 (61.00-58.50)	43.3 (45.1-40.8)
Utah			
<i>D. a. subsp.</i>	12 ♂♂	61.90 (63.00-58.00)	45.5 (47.6-43.0)
"	7 ♀♀	59.50 (61.00-58.00)	43.9 (45.0-42.9)
Texas			
<i>D. a. subsp.</i>	1 ♂	63.00	44.5
"	8 ♀♀	58.80 (61.00-57.00)	42.8 (45.5-38.3)
<i>D. a. brewsteri</i>	*54 ♂♂	63.41 (66.29-57.15)	49.78 (55.88-45.72)
"	30 ♀♀	60.34 (62.99-55.37)	48.98 (55.88-43.18)

*Converted to mm., ex Grinnell, Condor, vol. 5, May, 1903, p. 71.

After an examination of a series of yellow warblers from Beaverton, Oregon; and Colean, Corona, and Valladares, in Lower California, which are designated *Dendroica aestiva brewsteri*, I was impressed with the striking similarity of these specimens with those from the Uinta Basin, Utah, and southwestern Texas, which have been identified by Dr. Oberholser as *morcomi*. Van Rossem (1931) recognizes that the Rocky Mountain race of the Yellow Warbler is worthy of consideration. He distinguishes *morcomi* from *aestiva* by the slightly larger size and duller (less yellowish) green coloration. These facts are true of the Utah birds in so far as color is concerned, but the wing measurements are slightly less and the tails are slightly longer than the average of *aestiva*; the average wing and tail measurements of the Texas birds are almost identical with *aestiva*. On the other hand, when measurements of the Utah and Texas birds are compared with those of *brewsteri* examined, and those of *brewsteri* (Grinnell 1903), the measurements are nearly identical.

These western birds differ considerably from *aestiva* in that the chestnut streaks on the underparts are narrower and not nearly so distinctly marked. Van Rossem (1931) likewise points out a distinct difference between *morcomi* and *brewsteri* in that *brewsteri* is a much smaller bird. This fact has not been apparent in the specimens examined. The chestnut streaking of the Utah and Texas birds is identical with that of *brewsteri* from California and Oregon. Females of the Rocky Mountain birds are indistinguishable from females of *brewsteri*. They are paler than any examples of *aestiva* on hand and lack the brighter lemon yellow of the females of *rubiginosa*.

Since at this time the types and topotypes of *brewsteri* and *morcomi* have not been examined, it might be presuming to consider that *brewsteri* is a synonym of *morcomi*. Until these types are examined, the yellow warblers of the Uinta Basin must be considered as *Dendroica aestiva brewsteri*.

These warblers appeared in the Basin after the first week of May. They were found most numerous along the drainage systems. They showed a preference for the early developmental stages of the river floodplains, where there was dense cover and ample food. Birds were found nesting along Green River, at Jensen; along the White River at Ouray; and at Hill Creek, south of Ouray. Young birds were collected at Hill Creek, forty miles south of Ouray, on August 6. A. C. Lloyd collected young on July 24, 1935, at Vernal.

There was never any indication of migration of yellow warblers in the

Basin. They appeared during the first two weeks of May and disappeared early in September.

***Dendroica auduboni memorabilis* Oberholser. ROCKY MOUNTAIN AUDUBON WARBLER.**

Twenty-one specimens: near Jensen; twenty miles southwest of Duchesne; Green Lake, Uinta Mountains; Paradise Park, Uinta Mountains; and Uinta Canyon, twenty miles north of Roosevelt.

After comparisons were made with birds from Comox, Vancouver Islands, which are typical *auduboni*, and additional material from Beaverton, Oregon; Silverton, Colorado; Wilcox, Arizona; Apache, Grant County, New Mexico; San Diego, California; several localities in Lower California; and Chisos Mountains, Texas, it was found that the measurements of the wing and tail held true within limits as a character in separating the two races, *auduboni* and *memorabilis*. The following averages show the Uinta Basin birds compared with the measurements given by Oberholser (1921) for *memorabilis* and *auduboni*.

		Uinta Birds		Oberholser	
		Wing	Tail	Wing	Tail
<i>D. a. memorabilis</i>	♂.....	78.9	59.9	80.5	63.0
	♀.....	73.9	56.6	73.9	58.1
<i>D. a. auduboni</i>	♂.....	75.3	57.2	74.9	58.2
	♀.....			71.6	56.6

The color of the plumage shows considerable variation. Birds which according to measurements are *memorabilis* had a black breast, this black extending down the flanks more extensively than in *auduboni*; yet this character is lacking in many individuals. It is noticeable that the black of the lores becomes more pronounced, running back over the auriculars in *memorabilis*. Several of the intergrading Uinta Basin birds show a variation in the extent of black over the lores and auriculars. The British Columbia specimens (true *auduboni*) also show a variation in the extent of this marking. Apparently, the only dependable distinguishing characteristic between the two races is the difference in wing and tail measurements. In considering a large number of specimens (excluding the very distinctive *Dendroica auduboni nigrifrons* of southern Arizona and Mexico), the birds fall into two groups: the smaller birds of the west coast, *auduboni*; and the larger individuals of the central Rocky Mountains east to central western Texas, central New Mexico, central Colorado and central Montana, *memorabilis*.

In the Uinta Basin the breeding birds are *memorabilis*, with a few indi-

viduals showing intermediate characters. The same is true of birds taken in Brewster County, Texas (Van Tyne and Sutton, 1937). On the other hand, fall birds show no plumage characters that would make one suspicious of variations; therefore in these cases, measurements alone are the means of differentiation.

Of the warblers in the Uinta Basin the Audubon Warbler was the most abundant spring migrant. On May 1 large numbers of these birds already were passing up the river courses of the Basin. About ten per cent of these migrants were *Dendroica a. auduboni*, while the remainder were *Dendroica a. memorabilis*. This migration continued throughout May, but after the first of June birds were not seen in the low country. At Green Lake, on June 10, they were numerous and could be heard singing from every corner of the yellow-pine forest; the males used the upper branches of the pines for singing posts. A pair of birds was seen carrying nesting material to a large yellow pine. Careful scrutiny revealed the partly built nest within a foot of the terminal end of a large branch. The branch was the lowest one on the tree, although it was forty feet from the ground and ten feet out from the main trunk. Upon my second visit to Green Lake, from June 29 to July 5, the warblers of this nest were feeding young. Because of the location of the nest, it was not possible to observe the activities closely. There was still considerable singing by the males at this late date, but it was much more subdued than it had been on the earlier visit. At Indian Canyon, June 17 to 20, Audubon warblers were encountered in considerable numbers; their excited chirps indicated nests. Two females collected at this time had brood-patches with well-developed ovaries, indicating nesting activities.

On July 8, just below Paradise Park, Uinta Mountains, at an altitude of 8000 feet in the transition between the aspens and lodgepole pines, a pair of Audubon warblers was seen in some tall pines. From their actions it was apparent that they had young in the vicinity. Several others were observed at Paradise Park, altitude 10,050 feet, in the Engelmann spruce-alpine fir forest on July 9. A female was collected with a well-marked brood-patch. Ridgway reports (1877) that the Audubon Warbler was a common breeding form at Parley's Park and Pack's Canyon. On June 23, 1869, a nest with one egg and three young was found. The nest was located near the extremity of the branch of a pine tree about ten feet from the ground.

The fall migration of this warbler was late. The birds, with a large number of young, were still on their breeding grounds in considerable

numbers on September 15 (Green Lake). In Uinta Canyon, twenty miles north of Roosevelt, Audubon warblers (*memorabilis*) were still in molt on August 9, but they were beginning to move down to lower altitudes. At the Ashley Creek marshes the first migrants were noticed on September 20. After this date and until I left the Basin in early October, there was a steady movement of Audubon warblers down the Green River valley. Again, only about ten per cent of the migrants were *auduboni*. Audubon warblers, according to A. C. Lloyd, were very common in migration in the vicinity of the Ashley Creek marshes. Specimens were collected as early as April 27 and until May 17 during 1935.

***Dendroica auduboni auduboni* (Townsend). AUDUBON WARBLER.**

Three specimens: 12 miles east of Vernal; and two miles south of Jensen. This warbler occurred only as a migrant in the Uinta Basin in the spring and fall; during these seasons it was only about one-tenth as numerous as *Dendroica auduboni memorabilis*. There was no evidence from the specimens of Audubon warbler collected on their breeding grounds that this race occurred in the Basin during the nesting period. In the field there is no satisfactory method of distinguishing *auduboni* from *memorabilis*.

***Dendroica nigrescens halsei* (Giraud). ARIZONA BLACK-THROATED GRAY WARBLER.**

Nine specimens: ten miles west of Vernal; near Jensen; Cottonwood Springs, nine miles west of Vernal; and Hill Creek, forty miles south of Ouray.

During May the Black-throated Gray Warbler was common in the low country of the Basin, particularly along the main drainage systems. At the Ashley Creek marshes the first birds were seen on May 1, and several could be seen each day along the Green River floodplain. They showed a preference for the upper cottonwood canopy, where they could be seen feeding energetically in the thickest foliage. In 1934 A. C. Lloyd reported the same occurrence at the Ashley Creek marshes.

Only an odd straggler was seen in these lower altitudes by June 1. But at Cottonwood Springs, ten miles west of Vernal, I was surprised to find this warbler abundant at the edge of the Juniperus-Pinus Community, at an altitude of 6200 feet. The black-throated gray warblers were heard singing on all sides at Cottonwood Springs. The birds would come to water, feed among the dense foliage immediately around the water-holes,

and then disappear into the juniper-pinyon woods. Although the birds were watched continually, there was no indication of nesting activities. Later investigations revealed that the birds had already built their nests and were laying or brooding, which was responsible for the activity shown by the males. On June 28, while at Cottonwood Springs, only a few of these warblers were seen. They began to chirp loudly and to become very excited. Soon several juvenal birds that evidently had just left their nests and some that were able to fly were discovered. Although feathers of the natal down were still in evidence, the light gray of the juvenal feathers showed up strikingly. The back was very dark and there was a light gray line over the eye to a point just in front of the eye, similar to the superciliary line of the adult. The ventral surface was light gray streaked with dark gray, shading to a dark gray throat and breast. At Hill Creek, forty miles south of Ouray, on August 5, juvenal birds and a female with a brood-patch were collected in the dense willows and cottonwood thickets of the Hill Creek floodplain. These birds had moved from the scattered junipers and pinyons of the surrounding hills where they had nested.

The fall migration of these warblers had already commenced by August 9; at least, it was the first initial move from their nesting grounds to the lower floodplains of the Uinta Basin drainage system. From this date, until September 20, there was a gradual increase in the migration, which reached a peak between the 18th and 22nd of September. After September 22, to the end of the month, few black-throated gray warblers were seen.

Seiurus noveboracensis notabilis Ridgway. GRINNELL WATER-THRUSH.

Three specimens: Vernal; and two miles south of Jensen. These specimens were collected by A. C. Lloyd: a male on May 8, and two females on August 11, 1935. They agree with the light-colored, heavily streaked birds from Brewster County, Texas. In the Basin they were found only as migrants in the spring and early fall.

Oporornis tolmiei (Townsend). MACGILLIVRAY WARBLER.

Six specimens: Ashley Canyon; near Jensen; Hill Creek, forty miles south of Ouray; twenty miles north of Vernal; five miles south of Heber; and five miles south of Jensen.

Two birds were seen on May 25 at the Ashley Creek marshes, but these were the only ones observed during the entire spring migration.

A. C. Lloyd collected a female at the marshes on May 27, 1935, and reports that he saw several during the May migration.

A trip was made on June 22 to the Ashley Creek Canyon about twelve miles north of Vernal. Here I was surprised to find this warbler in the dense shrub cover of the cottonwood floodplain. The birds were very energetic, chirping loudly and flying nervously here and there as I approached certain areas. A male in badly worn plumage was collected. The female was shy and would not show herself for more than a moment. On June 29, farther up the river (about 20 miles north of Vernal), another pair was heard, and later the male was collected. This bird's gonads were still in breeding condition. Its plumage also was badly worn. At these late dates and from the actions of these two pairs, they were undoubtedly nesting. Ridgway (1877) found nests and eggs of the Macgillivray warbler at Parley's Park, Wasatch Mountains, on June 22, 1869, and at Pack's Canyon, Uinta Mountains, on July 3, 1869.

Later (August 5) on Hill Creek, forty miles south of Ouray, Macgillivray warblers were common but very wary. Several were heard and seen, but only one was collected, a male in badly worn plumage that was starting to molt. Young birds were seen on two occasions in the dense willow growths of the creek valley. They would either disappear before one could be collected or would come up so close in the brush that it was impossible to shoot them.

In the lowlands along the Green River floodplain and Ashley Creek marshes the first birds were seen on August 25. From this date until the last of September they were plentiful. The largest migration was noticed in the Provo River Canyon on the west side of the Basin, five miles south of Heber. Large numbers of these warblers were migrating down the river from September 6 to 9 in company with a heavy movement of white-crowned sparrows.

***Geothlypis trichas occidentalis* Brewster. WESTERN YELLOW-THROAT.**

Fourteen specimens: near Jensen. This yellow-throat is the breeding form in the Basin. Comparisons were made with birds from Texas, Oregon, British Columbia, and Saskatchewan, Canada. The measurements show considerable variation, but all fall within the limits of *occidentalis*. The Uinta Basin birds, however, show a variation in color that makes them stand out from other western specimens available. There is a much brighter yellow wash from the throat well down to the upper belly, where it fades out into light creamy tan, faintly yellow. The

flanks are much the same as the lower belly, but darker with a yellow shading from the breast. The under tail-coverts are yellow, tinged with cream-buff. The upper border of the black mask has a conspicuous white band, which is more extensive over the fore crown. The white, black, and yellow of this yellow-throat's head make it exceedingly conspicuous in the field. It seems that the present status of this warbler in the Rocky Mountains and Great Plains areas is in need of revision. This can be done only with a large number of specimens from a wide range of localities.

The Western Yellow-throat appeared during the first week of May, and became plentiful by May 19. It began to decrease after that date, but at least four pairs nested in the dense growths of the *Scirpus-Typha* swamp. Near the edges of the swamp, where willow growths were dense, the birds frequently were seen or heard singing. Fully developed young were sighted at the edge of the marsh just east of the Stewart ranch house on August 9. The birds remained well out in the rushes. A. C. Lloyd collected both a juvenal and an immature bird on August 4 and 5, 1935, at the Ashley Creek marshes.

Birds were seen at various points in the Uinta Basin, as follows: July 6, in some roadside ponds between Myton and Duchesne; July 18, along the upper Provo River ten miles southeast of Kamas; July 24, along the dense willows of the Yampa River, eight miles north of Elk Springs, Colorado; July 25, Beaver Creek, seven miles northwest of Ladore, Colorado; July 27, at the junction of the Green and White rivers, Ouray; August 5 to 7, along Hill Creek, forty miles south of Ouray; and August 28, Uinta Canyon, twenty miles north of Roosevelt. There was a heavy migration of yellow-throats down the Green River and Ashley Creek valleys from September 20 to the end of the month. In the vicinity of the Ashley Creek marshes they were especially numerous during the fall migration. Ridgway (1876) found the Yellow-throat to be a breeding bird at Parley's Park, Wasatch Mountains, but considered it rare.

***Icteria virens auricollis* Bonaparte. LONG-TAILED CHAT.**

Five specimens: near Jensen; Yampa River, and eight miles north of Elk Springs, Colorado.

The first chats were heard in the dense willow, rose bramble, and greasewood thickets on May 10 at the Ashley Creek marshes. The birds were exceedingly wary and furtive. By May 18 they had become abundant in the densest growths of the Green River valley as well as in the lower stream valleys of other sections of the Basin. The birds began nest-

ing in the vicinity of the Ashley Creek marshes during the last week of May. Two nests were found on June 21 in an extensive growth of rose brambles in the south end of Ashley Creek marshes. One nest contained three eggs and the other, four; in both cases the eggs were heavily incubated. When I visited the two nests on June 24, the young birds were just hatching. The adults lost their shyness, scolded loudly and approached within two feet of me. When I visited the nests again, on July 12, the young had gone. The only indication of a chat was the angry call note that was given when I walked into the territory.

On July 24, while on the Yampa River, eight miles north of Elk Springs, at the northeast corner of the Uinta Basin, chats were numerous. A male in very worn plumage and a juvenal bird were collected. The juvenal bird was well able to fly and was beginning to develop a yellow throat and breast, but it still retained some downy cream-colored feathers. The chats left early. A good number of them passed down through the lower valleys during the first two weeks of September. The birds were not seen in the Basin after September 25.

***Wilsonia pusilla pileolata* (Pallas). NORTHERN PILEOLATED WARBLER.**

Thirteen specimens: two miles, and five miles south of Jensen; near Jensen; Green Lake, Uinta Mountains; Uinta Canyon, twenty miles north of Roosevelt; Bald Mountain, Uinta Mountains; and Moon Lake, Uinta Mountains.

The birds from the Uinta Basin are clearly *Wilsonia pusilla pileolata*, in that they are a brighter yellow and their wing measurements average 59 mm. in the males and 55 mm. in the females.

As a transient in the Basin, this species was found to be plentiful along the dense willow thickets in the early floodplain development of the Green River and about the Ashley Creek marshes. In the spring it was not noticed until May 12, when several males were seen at the south edge of the Ashley Creek marshes. From then until June 8 the pileolated warblers kept passing through in fairly large numbers, following the river systems of the Basin, which may be considered avenues leading to the higher altitudes on the mountain slopes. But by this date these warblers had passed on out of the lowlands, and none was seen again until July 19, when two adults were observed on the south slope of the Uintas about twenty miles northeast of Kamas, at an altitude of 9000 feet. These birds were in the transition between the aspens and the lodgepole pines.

In the tangle of shrub growth, principally willows, along the edge of a swift mountain stream, the warblers were disturbed. Their actions could mean only that they had a nest or young birds close by. Both adults, with crests partly raised to show their annoyance, chirped loudly and fluttered about in the dense thicket. A third adult appeared, uttered its disapproval, and then disappeared. Several young birds were near by, and after a careful search, a partly developed juvenal bird was discovered sitting motionless in some willows. The bird was able to hop about but could not fly more than a few feet. The upper surface of this specimen is a dark olive green with a faint wash of olive lake. The underparts are a light greenish yellow, much darker on the throat and upper breast. The only mark that might be considered as conspicuous on the bird is a straw-yellow wing-bar at the terminal end of the greater wing-coverts. The female was taken to ensure a positive identification of the juvenal bird. Later in the day two birds were heard singing from a thick stand of willows bordering the stream a half-mile above this point. There were probably more nesting birds in the vicinity than my observations show, for this warbler was found in numbers at the Ashley Creek marshes as early as August 25.

Pileolated warblers in family groups were feeding among the dense alders and willows at Moon Lake, Uinta Mountains, on August 21. The slightly darker immature birds showed up in distinct contrast to the bright yellow adults. As late as September 13, birds were collected at Green Lake, Uinta Mountains, at an altitude of 8000 feet. From August 20 to the end of September this bright yellow warbler was very common along the floodplains of the river and creek valleys of the Basin. Excepting the Audubon Warbler, this was the commonest warbler seen during the migration seasons in the Uinta Basin. In 1935 A. C. Lloyd collected but one of these warblers at the Ashley Creek marshes and regarded the form to be rare in the vicinity. From the numbers seen in migration and the breeding birds in the near-by mountains in 1937, I am at a loss to account for the lack of birds in 1935.

Setophaga ruticilla (Linnaeus). AMERICAN REDSTART.

One specimen: two miles south of Jensen. A single male was collected by A. C. Lloyd on August 20, 1935. On September 20, 1937, a pair was seen in some dense willows at the Ashley Creek marshes. Ridgway (1876) reported that this bird was common and that it nested at Parley's Park, Wasatch Mountains, and at Pack's Canyon, Uinta Mountains,

but was limited in its distribution by the arid and treeless regions of the Great Basin.

***Dolichonyx oryzivorus* (Linnaeus). BOBOLINK.**

One specimen: Jensen. This single male was taken on May 21 in a hay field at the southwestern extremity of Ashley Creek marshes. Although I watched for further evidence of others in the Basin, none was seen. Some of the older residents, who are quite reliable, told of seeing numbers of these birds on the open hay flats south of the marshes, but stated that the birds were rather irregular and put in an appearance only every other year or so.

***Sturnella neglecta neglecta* Audubon. WESTERN MEADOWLARK.**

Twenty-one specimens: two miles south of Jensen; Jensen; ten miles east of Vernal; and Blue Mountain, 8000 feet.

A male (No. 121157), collected on May 15 at Blue Mountain, is a very dark-plumaged bird; the dorsal surface is heavily marked with dark gray-brown; the bars of the secondaries and rectrices are broad and run together at the shaft; the flanks and sides of the breast are heavily marked with black spots and streaks. It has a wing measurement of 123 mm., tail 76 mm., culmen 33 mm., and tarsus 37.5 mm., which fall within the average for *neglecta*. This bird has the distinguishing characteristic of being very dark. During a second trip to Blue Mountain another male was taken. This example is slightly darker than the lowland birds, but the difference is so inconsiderable that the bird must be regarded as the same form as the lowland *neglecta*. The series of twenty-one specimens all show a tendency to be darker on the dorsal surface and flanks than specimens of *neglecta* from Boulder, Colorado, and Marathon, Texas. Specimens from Davidson, Saskatchewan, compare favorably with those from the lower arid country of the Uinta Basin.

Meadowlarks were very common in the Basin. On May 1 they were already plentiful and remained to nest in the meadows and cultivated fields, wherever there was sufficient cover and grass. They were limited in their distribution to the lower altitudes up to the edge of the Juniperus-Pinus Community, except at Blue Mountain, where, at 8000 feet, three pairs were found nesting on the high-altitude sagebrush (*Artemisia tridentata*) plateaus. They were wary, and it was only with difficulty that two specimens were collected. Down on the lowlands they were tame, and their loud clear songs added much to the hot dry days of sum-

mer when all else was quiet. As early as August 12, meadowlarks in family groups were the most common birds seen in the Basin. By the first of September they began to gather into larger flocks in the low country. When I discontinued my work in the Basin on September 30, meadowlarks were still numerous, but it was already apparent that a good portion of the population had begun to migrate southward.

Xanthocephalus xanthocephalus (Bonaparte). YELLOW-HEADED
BLACKBIRD.

Nine specimens: Jensen. These birds were first noticed on May 2 at the Ashley Creek marshes. At this time, from forty to two hundred males could be seen flying in compact flocks, but no females were in evidence. It was not until May 15 that females were noticed, and they likewise were in segregated flocks. The yellow-heads were coming and going from the center of the large *Scirpus-Typha* marsh. By May 20 there were females among the flocks of males, and soon after this the nesting season commenced. Eggs and young were found in the marsh from June 10 to the end of July.

While it was not possible to make a comprehensive survey of the nesting population, it was noticed that, although the yellow-headed blackbirds were in the marsh in large numbers, they were nesting in scattered colonies. There were usually from ten to forty pairs in these colonies, which seemed to be separated slightly from those of the red-wing blackbirds. The one species apparently did not interfere with the other's territory.

From the middle of August to the end of September the fall flocking increased steadily. The main migratory flocks reached their peak about the middle of September. After this period there was a noticeable decrease in the population, although there were still several flocks in the Ashley Creek marshes on September 30. Yellow-headed blackbirds were seen at only one other point in the Basin, in some small *Scirpus* swamps in the Duchesne River between Myton and Duchesne. Ridgway (1874) reports that this blackbird was breeding at Parley's Park, Wasatch Mountains, in the summer of 1869.

Agelaius phoeniceus fortis Ridgway. THICK-BILLED RED-WING.

Twenty-four specimens: near Jensen; two miles south of Jensen; Ouray; Hill Creek; and forty miles south of Ouray. This series of breeding males and females are of the form *Agelaius phoeniceus fortis*. Follow-

ing are the limits and averages of the specimens in question. The author is indebted to Dr. H. C. Oberholser for his identification of a portion of this series as *fortis*.

Uinta Basin breeding birds:

	Wing	Tail	Culmen	Depth of bill
9 ♂♂.....	121-128	88.5-96	21.2-22.8	9.9-11
	(125.7)	(91.2)	(22.1)	(10.6)
8 ♀♀.....	102.2-108	72-77.8	17-19.5	8.9-9.5
	(106)	(74.5)	(18.2)	(9.2)

About ninety per cent of the spring and fall migrants were *fortis*. During the latter half of September, when the red-wing migration was at its peak, three specimens of *nevadensis* were collected. There was no striking exemplification of intergradation in the Uinta Basin breeding birds. In describing a new race of red-wings from Utah, Bishop (1938) remarks that it seems rather surprising to find races of *phoeniceus* such as *nevadensis* in a breeding colony of *utahensis*, an adult male of *sonoriensis* in a breeding colony of *mailliardorum*, and a typical female *mailliardorum* in a breeding colony of *nevadensis*. Such intermingling of apparently distinct races would, even though it were the exception, produce in a relatively short time a highly confused population of intermediates. This circumstance already has become in many cases a problem that calls for an intensive revision of the systematics of the groups involved.

The red-wings appeared in very large flocks in the Basin by May 1. Many of the flocks were made up principally of males, although the females were already in the Ashley Creek marshes in large numbers. Nesting was well under way by June 1, and continued into the first week of August. The main breeding colonies occurred at the Ashley Creek marshes and along all of the lower drainage systems of the entire Basin. Wherever a suitable *Scirpus* swamp was lacking, scattered small colonies of from ten to thirty individuals could be found in the dense willow growths of the Basin's drainage system. Flocking began as early as August 9 and increased rapidly in the first week of September around the Ashley Creek marshes. These large fall congregations included several hundred birds, and at times there were from one thousand to fifteen hundred in a single flock. They invaded the cultivated fields, where they fed on grain.

The birds were still in the Basin by September 30. It was of interest that during the latter half of September these assemblages could be seen in the Green River valley in the evening, coming into the Ashley Creek

marshes in large compact flocks and flying into the *Scirpus-Typha* swamps to roost for the night. The noise of these thousands of roosting birds often could be heard a mile or more away. In the morning, as the sun rose above the eastern horizon, the birds would become very noisy and soon could be seen leaving the marsh, going in every direction, but always in large, dense, swiftly moving flocks.

Agelaius phoeniceus nevadensis Grinnell. NEVADA RED-WING.

Three specimens: two miles south of Jensen. These specimens were taken during the latter half of September. They averaged: wing, 132.5 mm.; tail, 97.9 mm.; culmen, 21.8 mm.; depth of bill at base, 11.1 mm.

This race appeared only as a migrant in the Basin, but it may have been more numerous as a migrant than the present evidence would warrant.

Icterus parisorum Bonaparte. SCOTT ORIOLE.

Five specimens (three immature): twenty-five miles southeast of Vernal; and Powder Springs, twenty miles southeast of Vernal. A pair of Scott orioles suddenly flew up from an isolated juniper tree at Powder Springs on May 8, while I was walking along the lower fringe of the *Juniperus-Pinus* Community at a point where it meets the "bad lands." Here, at an altitude of 5500 feet, a poor Mixed Desert Shrub Community exists. The birds were cautious and flew low into the dense juniper bushes. Finally the female was collected, and although a careful search was made, the male was not seen again. The female was in full breeding condition, with well-developed ovaries. The pair was undoubtedly preparing to nest, for when pursued they seemed reluctant to leave the general neighborhood.

The next trip made to this locality was on June 25. At a point five miles east of the first encounter with this species, a male was heard chirping loudly from the top of a juniper. Upon approaching him, I saw him drop quickly out of the tree and vanish over a near-by ridge. Following the bird proved futile. Calling loudly, he repeatedly evaded me by flying about in a dense stand of junipers, and then disappeared. When I returned to the spot where the bird was first observed, a second individual, a female, put in an appearance. The male with great anxiety came to the scene to add his alarmed notes to the female's. Eventually, three half-grown juvenal birds were located. These birds were feathered except for the wings and tail, which were only partly developed. The

young birds were soon caught, for they were barely able to fly a hundred yards or so. Likewise the female was collected, but the male made a hurried exit and was not seen again. The male probably had a juvenal bird that was able to fly with him and took it off into the dense juniper growths farther up the hillside. The female had a well-worn brood-patch and showed considerable feather wear throughout her plumage.

From the available published data this is an extension of this species' nesting range from southwestern Utah in the Beaverdam Mountains. Here, Dr. Merriam (Fisher, 1893) recorded having seen a few individuals in the juniper belt of the Beaverdam Mountains on May 10-11, 1891. It was from this report that the fourth edition of the A.O.U. "Check-List" places the range of the Scott Oriole in the southwestern corner of Utah. The Juniperus-Pinus Community, chosen by this bird in northeastern Utah, is very common throughout the region, from the Basin to the Arizona border. No doubt, with further work in the State, more records of this interesting oriole will be brought to light.

***Icterus bullocki bullocki* (Swainson). BULLOCK ORIOLE.**

Fourteen specimens: near Jensen; and two miles, three miles, and four miles, south of Jensen. These orioles became very abundant during the first week of May, reaching their peak between the 7th and 15th of the month. The greater number of individuals during the early migration were males, but the females became more noticeable as the birds began to spread out over the river valleys, creeks, and cultivated areas of the Basin, wherever the floodplains afforded the dense foliage of cottonwoods. Nests were first observed on May 21. A pair of birds was seen carrying nesting material to a tall cottonwood near my camp on the Stewart ranch. The nest was hanging from a large branch some ten or twelve feet from the trunk and about twenty feet from the ground. The birds were tame and went about their work with little concern for our presence. After this date, numerous nests were found along Ashley and Brush creeks, Green, White, Duchesne, and Provo rivers, Willow and Hill creeks, and in all of the towns of the lower regions of the Basin. The birds were not observed above 6000 feet; they seemed to prefer the lower valleys of the Basin's drainage system.

Young birds were seen July 24 on the Yampa River, eight miles north of Elk Springs, Colorado. There was a noticeable decrease in the population after the first week of August. This gradual disappearance continued until, by the middle of September, the birds had left the Basin. There

was no indication of flocking; it was merely a gradual movement, until it became apparent that there were no more brilliant Bullock orioles in the cottonwoods.

A. C. Lloyd reported the birds very common from Jensen to Horseshoe Bend, on the Green River, in 1934 and 1935.

***Euphagus cyanocephalus cyanocephalus* (Wagler). BREWER BLACK-BIRD.**

Ten specimens: near Jensen; Blue Mountains; and Uinta Canyon, twenty miles north of Roosevelt. This blackbird was very common in the Basin from early May until late September; it occurred both in the agricultural districts and in the mountains at an altitude of 7500 to 9500 feet.

During May the birds appeared in flocks of from ten to three hundred individuals, but as the breeding season approached, they began to break up into small bands of from four to eight birds. These formed nesting colonies along the main watercourses of the Basin's drainage system. Along these river and creek banks the bulky nests could be seen often in the dense willows and cottonwoods. They probably used the same nesting sites year after year, for there were always a number of old nests scattered through the colony.

The first young were seen in the vicinity of the Ashley Creek marshes, on June 12, and from this period on the small resident flocks increased. They could be seen frequently around barnyards and cultivated fields during July and August. But large flocks were seen also along the mountain slopes of the Basin, particularly during August and September, when they were seen on the ground feeding on seeds and insects. Often in September they were observed in company with great flocks of red-winged blackbirds, feeding on grain in the cultivated fields. At this time of the year their food habits may seem detrimental to the interests of the agriculturist; yet, if this yearly consumption of food is considered in relation to their unrestricted war on insect pests from the time they arrive in early spring until they leave in the late fall, they might well be regarded one of the most valuable birds on the Uinta Basin farms.

A. C. Lloyd found the blackbirds common around Jensen during the 1934 and 1935 seasons. Several residents of the Basin said that flocks of from twenty to fifty of these birds often remain about sheep and cattle camps throughout the winter. Ridgway (1877) reports finding two nests and the eggs of the Brewer Blackbird at Parley's Park, Wasatch Moun-

tains, on June 24, 1869. One nest was in brush by a stream and the other was in a cottonwood along a stream. On July 28, 1869, at the same locality, he collected a juvenal male.

Molothrus ater artemisiae Grinnell. NEVADA COWBIRD.

Three specimens: near Jensen, Vernal. This cowbird was not very abundant in the Basin, but it was seen at most points throughout the lower and cultivated parts of the region. Three were noted at an altitude of 8000 feet on Blue Mountain, on May 22. Again, on July 29, seventy-five miles south of Ouray at the head of Florence Canyon, 8000 feet, five were seen with a herd of cattle. Small groups of from three to five individuals, usually two or three females, were seen about the Ashley Creek marshes and thickets during June and July. One robin's nest and a sage thrasher's nest were found to be parasitized by the cowbird. A. C. Lloyd noted a number of red-winged blackbird nests parasitized by these pests in 1935.

Piranga ludoviciana (Wilson). WESTERN Tanager.

Fifteen specimens: two miles south of Jensen; Indian Canyon, twenty miles southwest of Duchesne; Beaver Creek, Moffat Co., Colorado; Green Lake, Uinta Mts.; Moon Lake, forty miles north of Duchesne; Uinta Canyon, twenty miles north of Roosevelt; and five miles south of Heber. This tanager was the most conspicuous bird of the upper altitudes of the Basin. At an altitude of 8000 feet in the yellow-pine forests, they were found to be very numerous. Throughout the Basin, however, this species ranges through a number of altitudinal communities, varying from 7500 to 10,000 feet, from the yellow pine, blue spruce, aspen, and lodgepole pine, to the alpine fir Communities.

Western tanagers frequently were heard singing from the tops of the highest cottonwoods along the Green River during May, but at no time were they ever numerous. The last to be seen and taken (June 9) in the low country was a female with well-developed ovaries. The following day, June 10, a trip was made to the yellow-pine forests at Green Lake. Here the western tanagers were at the height of their breeding season. Males could be heard from all corners of the forest, singing their clear song. The males always chose the highest pine tree, and from its topmost branch they would sing for an hour at a time. A female was seen carrying nesting material once, but other than that there was no indication of nests. On a later visit to this same locality, June 29 to July 5, young

birds were noted and on one occasion a pair was seen feeding young. The nest was in a large yellow pine, well out toward the tip of a long branch, and about forty feet from the ground. Few satisfactory observations could be made.

By July 25 the birds were in an advanced postnuptial molt, and already they were beginning to come down to lower altitudes. However, their movements were slow. On September 15 tanagers were seen at Green Lake, and on August 9 a female was seen in the cottonwoods on the east side of the Green River across from the Ashley Creek marshes. The main movement came a little later, for on August 28 young and adults were abundant halfway up Uinta Canyon. The main fall migration wave struck the lower river valleys of the Basin during the first two weeks of September. They never were seen in any numbers at this time. They seemed to scatter over the valleys and to move rapidly south. After the middle of September no further individuals were observed.

***Hedymeles melanocephalus melanocephalus* (Swainson). BLACK-HEADED GROSBEAK.**

Eleven specimens: near Jensen; two miles south of Jensen; twenty miles north of Vernal; Green Lake, Uinta Mountains, forty miles north of Vernal; Beaver Creek, Moffat County, Colorado; and Moon Lake, forty miles north of Duchesne.

The Black-headed Grosbeak was a very abundant and conspicuous bird in the Uinta Basin during 1937. Throughout May they were numerous around the Ashley Creek marshes, where one or more of these birds inhabited every tangle of brush. For a time it looked as if two or three pairs would nest near my camp on the Stewart ranch, but after June 7 the whole population vanished. Ridgway (1877) reported that at Parley's Park, June 27 and 28, 1869, two nests with eggs were found in some willows along a stream. A male was incubating on one of the nests. According to A. C. Lloyd these birds were common at the Ashley Creek marshes in the spring of 1934 and 1935, but were not seen in the summer. Later their nesting range was established in the Basin. The lowest nesting altitude was at 5500 feet in some of the canyons, Ashley Creek, Brush Creek, and Uinta River, where there was a very dense growth of the Cottonwood Floodplain Community. From these projections into the low altitude country, the birds seemed to miss the *Juniperus-Pinus* belt, but in the Sub-montane Shrub they became abundant. Although at various points in the mountains of the Basin, between altitudes of 7000

to 10,000 feet, there were considerable variations in the components of the plant communities; yet these grosbeaks were most abundant in the Sub-montane Shrub, where yellow pines, oaks, and Douglas fir or Blue Spruce were closely associated with the lower aspen transition. Such conditions were prevalent at Moon Lake, Uinta; Canyon Indian Canyon; the head of Florence Canyon; Green Lake; from Kamas to a point where the lodgepole pines became a dominant community at an altitude of 9000 feet; and the northeast rim of Blue Mountain. Although most of the above localities were visited late in the nesting season, young birds were frequently seen after July 1. Young that were still being fed by the adults were observed on August 20 at Moon Lake. The first southward movement of the population started from the higher altitudes by July 23-27, when a considerable number were seen on the Yampa River, eight miles north of Elk Springs, Colorado, and at Beaver Creek, seven miles northwest of Ladore, Colorado. By August 9 they reached the Green River in the vicinity of Jensen and the Ashley Creek marshes. This migrating population steadily increased, until by the first two weeks of September all the lower drainage systems of the Basin contained a large population. Even at the end of September, five birds were seen in the Ashley River floodplains, but these, no doubt, were quickly moving south.

***Passerina amoena* (Say). LAZULI BUNTING.**

Nine specimens: six miles north of Jensen; twelve miles east of Vernal; two miles south of Jensen; and Cottonwood Springs. This bunting was not plentiful in the Basin, but along the Green River from the Dinosaur National Monument to Ouray it was common. It was not observed until May 27, when a male was heard singing from the edge of a cultivated field. A male and female with fully developed testes and ovaries were collected. From this time on, these buntings were seen or heard during June and July whenever field work was carried on along the Green River near Jensen. They seemed to prefer the cultivated fields, where they could be seen along the margins, feeding in the dense weed-patches or in the fields just after they had been irrigated. On June 24 several families were seen at the Ashley Creek marshes; the young birds were fully grown and able to fly well. After the first week of September the Lazuli Bunting was not observed in the Basin. A. C. Lloyd says that they were rare at the Ashley Creek marshes in 1934 and 1935. He collected a male on August 7, 1934, two miles south of Jensen, and a second male, on June 2, 1935, ten miles north of Vernal at Steinicker Draw. Ridgway (1877) says that

this bunting was a very common species in all of the fertile valleys as well as the lower canyons of the mountains. At Parley's Park, Wasatch Mountains, he found nests and eggs of this bunting on June 23, 27, and July 2 and 16, 1869. The nests were found mainly in rose bushes close to a stream.

Hesperiphona vespertina montana Ridgway. MEXICAN EVENING GROSBEAK.

Three specimens: Green Lake, Uinta Mountains, forty miles north of Vernal.

This grosbeak was not plentiful in the Basin in 1937. It was observed at Indian Canyon, twenty miles southwest of Duchesne, on June 20; below Paradise Park in the aspen transition, on July 10; twenty miles northeast of Kamas on July 19; and at Moon Lake on August 20. In these instances more than from two to five individuals were never seen. They were in flight in nearly all cases, since always they were very wary. In all of the above localities they were in the aspens and the aspen transitions between the Sub-montane Shrub and Lodgepole Pine Communities. The specimens taken at Green Lake on July 2 and 3 were two females and one male. The birds had moved in close to our camp and were feeding on a tall mountain birch (*Betula fortinalis*), where there was a scattering of birches in a stand of aspens. Both females had brood-patches, and the male showed well-developed testes. The birds were nesting in the vicinity, but after an intensive search no further individuals were seen.

Carpodacus cassinii Baird. CASSIN PURPLE FINCH.

Eighteen specimens: Green Lake, Uinta Mountains; Paradise Park, Uinta Mountains; and Bald Mountain, Uinta Mountains.

The Cassin Purple Finch was first seen at Green Lake on June 10. The birds were plentiful, the males singing from the topmost branches of the yellow pines. At times small flocks of from ten to thirty individuals would be found feeding on the ground at the foot of the pine trees. They were always shy, and at the slightest move the old red males would fly to a near-by pine. Immediately the whole flock would follow. It was always a surprise to see how easily these birds could simply vanish into the pine foliage, and still their musical, quiet chirps and songs could be heard on every hand. Only a day was spent on the first visit, and although a careful check was made, no nests could be located. From the actions of the singing males, it was evident that nests were close. From

June 29 to July 5 the finches were very numerous in the yellow pines of Green Lake. But this time many immature birds were among the feeding adults. Adult males were still singing, although not so continuously as three weeks before. At Paradise Park, July 9, a male was heard singing from the top of a tall Engelmann spruce. As it turned out, there were just a male and a female—the female having a well-developed brood-patch.

On July 17 on the Bald Mountain, twenty-five miles northeast of Kamas, a number of these finches were seen and heard in the spruce-fir forest, at an altitude of 10,500 feet at the edge of timberline. Several were collected and young birds were found to be about two-thirds grown. Hardly able to fly, they were being fed by the adults. It was amusing to see how busy the full-plumaged males were. For some reason or other, the males seemed to be doing at least three-fourths of the work; each male had two or three young to feed. The females were indifferent to the loud chirps of the young birds.

According to Ridgway (1877), Cassin purple finches were abundant in the Wasatch and Uinta Mountains from May to August and nested during the whole of this period. Most of the nests were found among the aspens and narrow-leaved cottonwoods of the higher portions of the ravines, where these trees replaced the conifers. Nests and eggs were taken at Parley's Park, June 23, 28, and July 19, 1869. Juvenal birds were taken at the same locality on August 16, 1869. In the fall, September 14, large flocks of these finches were encountered at Green Lake. The flocks, numbering from fifty to three hundred individuals, fed for the most part on the ground, where they were able to pick up seeds of various types. In these flocks there were many juvenal birds. A small flock of seven finches was seen in some tall, dead cottonwoods, just south of the Ashley Creek marshes, on September 28. These were the only individuals observed during either the spring or fall migrations.

***Carpodacus mexicanus frontalis* (Say). COMMON HOUSE FINCH.**

Fourteen specimens: Cottonwood Springs; seventeen miles southwest of Vernal; twenty-five miles east of Vernal; twelve miles southwest of Vernal; ten miles west of Vernal; Green Lake, Uinta Mts., forty miles north of Vernal; seventeen miles southwest of Vernal; and two miles south of Jensen.

These finches were very abundant throughout the Basin. They seemed to prefer the cultivated portions of the area and the towns. In Vernal

and other towns of the Basin they were as numerous as English sparrows, and their melodious songs and the males in their red fronts added a touch of beauty to these western towns. They were always very numerous in the *Juniperus-Pinus* Community. Sometimes they would be the only bird form seen or heard on the sun-scorched juniper slopes. The House Finch is probably the widest-ranging bird found in the Basin, as it occurred from the low river floodplains and burning "bad lands" to timberline at 10,500 feet in the Uinta Mountains. The farmers and ranchers complain that these birds attack their fruits. When one considers that this bad habit lasts for only a month or so in the fall and that during the remainder of the year they feed on injurious weed seeds and insects, it is more than likely that the good done by this bird offsets its bad traits.

Pinicola enucleator montana Ridgway. ROCKY MOUNTAIN PINE GROSBEAK.

Eighteen specimens: twenty miles south of Duchesne; Paradise Park, Uinta Mts.; Bald Mountain, Uinta Mountains.

The above series contains twelve adult males, all of which are rich carmine flecked with buff and yellow spots over the breast, upper belly, head, back, and rump. This richer color in the birds collected at Paradise Park and Bald Mountain may be partly attributed to the loss of the feather barbules, giving the golden sheen effect. This peculiarity of feather wear is discussed fully by Dwight (1900).

This grosbeak was not a particularly common bird in the Uinta Basin, but it was probably more numerous than a first impression would warrant. It was first encountered in Indian Canyon, twenty miles south of Duchesne, on June 17. The birds were feeding in a dense stand of blue spruce, but only a single pair was seen. The males were singing quietly as they fed high in the tall conifers. The next time these grosbeaks were encountered was on July 7 at Paradise Park. Here they were very numerous in the spruce-fir forest up to the edge of timberline. At timberline, where scattered stands of spruce or fir formed islands on the alpine meadows, it was common to see one or more pine grosbeaks flying back and forth across the intervening openings. Later, on July 17-20, at the Bald Mountain, twenty-five miles northeast of Kamas, at the edge of timberline, 10,500 feet in altitude, they were common. The locality was nearly identical with Paradise Park; the forest was again dominated by Engelmann spruce and alpine fir. The birds were in postnuptial molt,

with very worn plumage. On two occasions adults were seen feeding fully developed young. The male birds even at this late date were singing, but it was not the loud clear song of the breeding season. It was impossible at this time to determine whether there was any altitudinal movement among these grosbeaks, for we left the Basin before the severe winter weather set in.

Leucosticte atrata Ridgway. BLACK ROSY FINCH.

Two specimens: Bald Mountain. These two specimens, a male and a female, were taken by Lawrence E. Hicks on July 20, 1939. The gonads of both birds indicated that they had nested. The plumages were very worn, showing no evidence of a molt. Dr. Hicks reports that he saw several pairs, which were probably mated. About one half-mile from the spot where the two specimens were collected, he found a nest with young, visited regularly by adults with food.

The Black Rosy Finch was reported by Stevenson (1872)⁴ as *Leucosticte tephrocotis* (not of Swainson), for the Uinta Mountains. From the data published the specimens collected by Stevenson were probably taken on the upper north slopes of the Uinta Mountains. Several ranchers in the Basin gave descriptions of the Black Rosy Finch, which they said appeared in flocks about their sheep camps during the winter. These camps were in the lower altitude Desert Shrub communities.

Spinus pinus pinus (Wilson). NORTHERN PINE SISKIN.

Twelve specimens: two miles south of Jensen; Green Lake, Uinta Mountains; and Bald Mountain. During the first two weeks of May large flocks of pine siskins frequently were heard as they flew over or settled in some tall dead trees around the Ashley Creek marshes. These birds never seemed to remain in the lower valleys for any length of time, but were ever on the move northward toward the high mountains. On June 10 large flocks were found in the yellow pines at Green Lake. These flocks numbered from fifty to four hundred birds, and there seemed to be considerable activity and singing. From June 29 to July 5 the siskins were still at Green Lake, but in small numbers. They were seen flying back and forth from a lodgepole-pine forest higher up on the mountainside, apparently coming to the yellow pines to feed. Just before leaving on July 4, I saw juvenal birds that were just able to fly being fed by the

⁴Prelim. Rep. U. S. Geol. Surv. Terr. for 1871 (1872), 464.

adults. Small flocks of from four to ten birds were seen at Paradise Park, July 7 to 10, and at Bald Mountain, July 16 to 20. These small flocks were made up of family groups, a pair of adults and from two to five juvenal birds.

Ridgway (1877) remarks that the Pine Siskin in considerable numbers was in the Uinta and Wasatch mountains in 1869. Here it was found with the Cassin Purple Finch in the pine forests and in the aspen copses. The nests were extremely scattered. A set of eggs from a nest near the extremity of a horizontal arm of a fir tree, about fifteen feet from the ground, was collected at Parley's Park, on June 23, 1869. Two juvenal birds were taken at Parley's Park on August 10, 1868. September 21 was the first date that I noticed the siskins in the lower country along the Green River. From this date to the end of September there was a considerable migration from the higher altitudes, but the birds seemed to be moving south rapidly.

***Spinus tristis pallidus* Mearns. PALE GOLDFINCH.**

Nine specimens: near Jensen; Ouray; five miles south of Heber; and two miles south of Jensen. The two females were in badly worn plumage, which probably accounts for the smaller measurements of both wings and tail; the seven males were taken from May to July. Consequently, they show considerable variation in the amount of wearing of the white on the edges of the tertials, greater coverts, secondaries, and rectrices. The general yellow of these specimens does not show any appreciable paleness from typical specimens of *tristis*.

The specimens have been ascribed to *pallidus* on the basis of measurements:

		Wing	Tail
Average for Uinta Basin	♂.....	76.9	50.5
	♀.....	72.2	45.5
Average for <i>pallidus</i> *	♂.....	78.0-74.9	56.0-50.3
	♀.....	75.0-72.1	54.0-51.0
Average for <i>tristis</i> *	♂.....	72.9-70.2	52.1-48.0
	♀.....	70.4-66.9	49.5-47.6

The Pale Goldfinch is a common summer resident in the Uinta Basin. It appeared during the first week of May, generally in small flocks of from ten to twenty birds. They seemed to prefer the cultivated areas and the towns of the Basin, where they built their nests and raised their young.

*Dwight, *Auk*, 19, April, 1902, p. 163, table 3.

After the nesting season they moved about over the farms, feeding on weed seeds. By the middle of August the flocks began to increase in size, and by the first of September from fifteen to fifty birds were frequently seen together; however, at the end of the month they had nearly all moved south. The inhabitants of the area enjoy these birds, referring to them as wild canaries.

***Spinus psaltria psaltria* (Say). ARKANSAS GOLDFINCH.**

Rare in the Uinta Basin. A single male was observed at close range in a private flower garden in Vernal on July 22. Later, between the 10th and the 12th of August, three more, a male and two females, were seen in Vernal. Earlier, several townspeople who were interested in birds remarked that they frequently saw two kinds of goldfinches in their gardens. These reports from Vernal may indicate that a few individuals nest here each year. Ridgway (1877) found this goldfinch in the Wasatch and Uinta mountains, where he considered it uncommon. According to his report it usually was found associated in small numbers with large flocks of the Pine Siskin (*Spinus pinus pinus*). From a nest in the top of a willow bush along a stream, one set of eggs was collected at Parley's Park on June 22, 1869.

***Loxia curvirostra benti* Griscom. BENT CROSSBILL.**

Twenty-three specimens (six immature): Green Lake, Uinta Mountains; and Bald Mountain.

			Wing	Culmen	Depth of Bill at Base	Coloration	
From Griscom, 1937							
<i>L. c. benti</i> , typical	♂		91-96	17-19	10.0-10.5	Rosy and pale.	
<i>L. c. benti</i> , Colorado	♂		92-98	17-19.5	10.0-10.5	Rosy and pale.	
<i>L. c. grinnelli</i> , typical	♂		92-98	17-19.5	10.3-11.5	Scarlet.	
<i>L. c. grinnelli</i> ,	♂		93-96.5	17.5-19.0	10.3-10.8		
Sierra Nevada Mts.							
Specimens tending toward <i>grinnelli</i> .							
Uinta Basin							
121539	♂	June 30	Uinta	93.0	20.0	10.8	Pale rose with not so much yellow.
			Mts.				
121544	♂	July 1	Uinta	93.2	20.0	10.8	Rosy red with considerable yellow green.
			Mts.				
121719	♂	July 19	Bald	95.0	19.3	10.8	Pale rose with little yellowish green.
			Mt.				

Uinta Basin (Uinta Mts.) *L. c. bentii*.

121357	♂	June 10	Uinta Mts.	92.3	18.5	10.5	Pale rose with a little yellow green.
121360	♂	June 10	Uinta Mts.	94.0	18.4	10.6	Pale rose with a little yellow green (worn).
121545	♂	June 1	Uinta Mts.	95.0	20.0	10.0	Rose red, considerable yellow green.
121560	♂	June 2	Uinta Mts.	92.5	19.5	10.0	Pale rose, little yellow green.
121559	♂	June 2	Uinta Mts.	95.0	20.4	10.2	Pale rose, little yellow green.
121608	♂	June 5	Uinta Mts.	93.0	19.0	10.0	Pale rose, little yellow green.
Averages				93.1	19.3	10.2	

The above table compares Griscom's measurements with those of the Uinta Basin birds. Griscom states that the wing length and exposed culmen of *grinnelli* are exactly as in *bentii*, but the former differ from *bentii* in having a much deeper bill, 10.3-11.5, (*grinnelli*) versus 10.0-10.5, (*bentii*). The three specimens 121538, 121544, 121719, in depth of bill, are decidedly *grinnelli*. Even in coloration there is a tendency for the rose to be deeper red, thus approaching *grinnelli*, yet upon comparison the birds are much paler and very rosy. Since the Basin lies in an area where *bentii* from Colorado and *grinnelli* from the west and south might meet, one or both of these races will exert an influence on the breeding population of the Basin. Griscom (1937) states that there are definite breeding records for *grinnelli* from Arizona, in the Kaibab National Forest, Grand Canyon, near Williams, in the Mogollon Mountains, the San Francisco Mountains, and near Springerville. The bird, however, has an erratic occurrence in Arizona. Summer specimens of *grinnelli* have been collected in the Charleston Mountains and the Shell Creek range of Nevada. Griscom has not found a single breeding record from either Utah or Nevada. The range of *bentii* is through the pine hills of north-eastern Montana, eastern Wyoming and into northern Colorado.

The six remaining adult males are typical *bentii* both in measurements and in general coloration. They are the same as the larger birds from Colorado, but average slightly larger: wing, 93.1; culmen, 19.3; and depth of bill at base, 10.2.

The first crossbills were seen on June 10 in the yellow pines around Green Lake. At this time they were flying in considerable numbers, but

usually in small flocks of from five to fifteen individuals. The males were singing and considerable activity was apparent. During the evening, after 4:00 P.M., these small flocks were seen flying from the yellow pines where they had been feeding to the lodgepole pines higher on the mountainside. The females all had brood-patches. From June 30 to July 5, numbers of crossbills were encountered at Green Lake, but at this date the population included a great many juvenal birds. These young birds were about two-thirds grown, and in most cases their tails were only half developed. It was obvious that they had not flown farther than the surrounding mountain slopes. The females had well-developed brood-patches, that were now gelatinous and thick. Both adults were kept constantly busy feeding the young birds. Most of the feeding was done on the ground or from the lower branches of surrounding trees.

Crossbills were not abundant at Paradise Park, but a single female was taken from a flock of three birds on July 9. These were the only individuals of this species seen; possibly, birds that had been here earlier had already moved to lower altitudes. A similar experience was had at Bald Mountain, twenty-five miles northeast of Kamas, where only one flock of nine birds was seen. Two were taken, a male and a female.

Oberholseria chlorura chlorura (Audubon). GREEN-TAILED TOWHEE.

Thirty specimens: Cottonwood Springs; Powder Springs; Blue Mountain; Jensen; twenty miles southwest of Duchesne; Green Lake; Yampa River, eight miles north of Elk Springs, Colorado; Beaver Creek, Moffat County, Colorado; Florence Canyon, seventy-five miles south of Ouray; Hill Creek, forty miles south of Ouray; and Heber.

The brown of the crown in the Uinta birds is a shade lighter than in comparable specimens from Texas, New Mexico, and Arizona. The birds are lighter than typical *chlorura*, although the gray of the breast is darker. Except for the crown, the gray cast in the Uinta specimens is probably due to feather-wear in the breeding individuals. The average measurements are the same as for typical *chlorura*.

This bird was an abundant spring migrant, passing up the drainage systems, where it could be found in the dense thickets of the early successional stages of the floodplains. For nesting territory, it occupied the Sub-montane Shrub Community, which occurs from about 7000 to 8000 feet on the mountain slopes. This includes dense growths of such shrubs as *Artemisia tridentata*, *Amelanchier pallida*, *Amelanchier prunifolia*, *Cercocarpus montanus*, *Purshia tridentata*, and *Symphoricarpos rotundifolius*.

A bird in juvenal plumage, just able to fly, was collected in the Sagebrush Community of Blue Mountain, altitude 8000 feet, on June 26. There was a large number of green-tailed towhees around at the time; the adults were conspicuous, for they were feeding young. Juvenal birds were taken on July 24 on the Yampa River, eight miles north of Elk Springs, Colorado, and on July 25 at Beaver Creek, Moffat County, Colorado. An immature male (no. 121787), taken on July 20 at Florence Canyon, still retains a little of the streaking on the breast, back, and head. The brown of the crown is already extensive. The first fall birds to appear in the lower parts of the Basin were seen in the vicinity of Jensen along the Green River floodplain in early September. They were still passing along the Green River valley in large numbers by the last of September.

Pipilo maculatus montanus Swarth. SPURRED TOWHEE.

Twelve specimens: Green Lake, Uinta Mountains; Ashley Creek Canyon; Hill Creek, from forty to seventy-five miles south of Ouray; Yampa River, eight miles north of Elk Springs, Colorado; Blue Mountain; and Uinta Canyon, twenty miles north of Roosevelt.

AVERAGE MEASUREMENTS		Wing		Tail	
<i>P. m. montanus</i>					
New Mexico, Colorado, Arizona.....	♂	90.2	mm.	104.2	mm.
	♀	84.6	"	98.0	"
<i>P. m. gaigei</i>					
Brewster County, Texas.....	♂	87.2	"	100.5	"
<i>P. m. curtatus</i>	♂	86.4	"	96.4	"
<i>P. m. arcticus</i>	♂	87.63	"	97.28	"
	♀	83.82	"	92.46	"
Uinta Basin specimens.....	♂	88.5	"	101.1	"
	♀	86.0	"	102.6	"

The Uinta Basin specimens show characters of both *montanus* and *arcticus* but appear more closely related to *montanus*. In measurements and general coloration, they are similar to *montanus*, although in most adults the heads, backs, and breasts are a tone darker. The buff flanks are a shade lighter than comparable specimens of *montanus* from New Mexico, Colorado, and Arizona.

They are also somewhat similar to *arcticus*, although the back, head, and breast are blacker. This character is not consistent even in *arcticus*, for there is considerable variation in the intensity of the black among individuals. The buff of the flanks is similar, although the Utah birds tend to be a little lighter. The measurements of *arcticus* are not ap-

preciably different, except that the tails are shorter than in the Uinta Basin birds. The females of *arcticus* are entirely dissimilar; they are much lighter over the dorsal surface (blackish gray), and the crown of one specimen is almost black. The Uinta Basin birds are similar to *curtatus*, except that the wing and tail measurements are longer and the buff of the flanks is lighter. The distribution of *montanus*, *arcticus*, and *curtatus* indicates the possibility of intergradation in the Basin between *montanus* from the east, *arcticus* from the north, and *curtatus* from the northwest through northern Nevada.

These towhees were abundant in the Basin. They passed up the river and creek valleys, seeking the dense undergrowth of the floodplains during May. They were not seen in the lowlands in June, for they had moved to the mountains. Their breeding grounds comprised a community between 7000 and 8000 feet. In the Basin this community consists of a dense shrub zone where the growth is three to four feet high and so thick that it is difficult to walk through. Graham (1937) calls it the Sub-montane Shrub or the Mid-altitude Artemisia Association. The chief components of the community of low, deciduous, bushy shrubs belong to the genera *Artemisia*, *Amelanchier*, *Cercocarpus symphoricarpos*, *Purshia*, etc. Although this major community is made up principally of shrubs, yet in the deep canyons and in other isolated localities, such trees as yellow pines, oaks, Douglas firs, and blue spruce occur. The adults and young remained in the Sub-montane Shrub Community until the middle of September. From then until the end of the month large numbers of birds passed down to the lowlands and migrated slowly southward along the river valleys of the Basin. They concentrated along the valley of the Green River, which with its tributaries drains the Basin. A considerable migration along the Provo River was observed between September 6 and 9. In following this route the birds passed through the Wasatch Mountains and emerged into the Great Salt Lake Basin.

***Calamospiza melanocorys* Stejneger. LARK BUNTING.**

A single specimen, a juvenal male, was collected on July 30, 1869, at Parley's Park, by Ridgway (1877).

***Passerculus sandwichensis nevadensis* Grinnell. NEVADA SAVANNAH SPARROW.**

Five specimens: ten miles east of Vernal. The Savannah Sparrow was not an abundant species in the Basin. They were fairly common along

the Green and White river floodplains. Although there was actually very little nesting territory in the area suitable to these birds, they were always found in the wet grassy flats around the mouth of Ashley Creek and along the edges of the marshes of the Green River. Appearing early in May at the Ashley Creek marshes, they could be heard singing at any time at our camp during May and June. Eight or ten pairs nested in the large grassy meadow southwest of Ashley Creek marshes. Two nests with eggs in an advanced state of incubation were located on June 25 at the edge of this meadow. On August 9, young were seen that were able to fly. They were still being fed by the parent birds. During fall migration in September only an odd individual of this form was observed at the Ashley Creek marshes. There was a considerable migration of savannah sparrows down the Provo River valley, five miles south of Heber, from September 6 to 9. A. C. Lloyd found this sparrow fairly common during 1934 and 1935, but at only one point. This was at the west end of the marshes in a cocklebur flat near Ashley Creek.

Poocetes gramineus confinis Baird. WESTERN VESPER SPARROW.

Eleven specimens: near Jensen; Blue Mountain, two miles south of Jensen; Moon Lake, forty miles north of Duchesne; Green Lake, Uinta Mountains, forty miles north of Vernal; and 15 miles southwest of Vernal.

The Vesper Sparrow is the most uniformly distributed bird in the Basin. It appeared as a migrant on the first of May and increased until the middle of the month. After the tenth of May it became less conspicuous in the low country of the Basin. But a pair could always be put up in the rabbitbrush (*Chrysothamnus stenophyllus*), shadscale (*Atriplex confertifolia*), and sagebrush areas. Juvenal birds that were barely able to fly were encountered on June 12, fifteen miles southwest of Vernal. Vesper sparrows were plentiful about the cultivated farm land of the Basin and over a greater part of the shrub desert. They were numerous at Green Lake from June 10 to the middle of September, at which time they were beginning to collect into migratory flocks. In all of the high mountain sagebrush areas and alpine meadows these sparrows were found to nest in numbers. Ridgway (1877) found this bird to be common at Parley's Park, Wasatch Mountains. He found nests here on June 23 and 25 and in July, 1869.

Chondestes grammacus strigatus Swainson. WESTERN LARK SPARROW.

Fifteen specimens: near Jensen; five miles south of Jensen; ten miles west of Vernal; fifteen miles south of Vernal; and Cottonwood Springs, Blue Mountain.

This sparrow was the most abundant and conspicuous bird in the low country of the Basin. It was found also in the Juniperus-Pinus Community and at several localities as high as 8000 feet, such as at Green Lake, head of Florence Canyon, near the top of Diamond Mountain, and Blue Mountain. Here it frequented the high-altitude sagebrush areas. There was little sign of nesting until the first of June. After the middle of June large numbers of juvenal birds were encountered. By July the lark sparrows began to gather into flocks in the low country. As late as August 25 two birds that still retained some of their juvenal plumage were collected from a large flock five miles south of Jensen. This sparrow was still abundant in the "bad lands" and lower drainage systems of the Basin as late as September 30. A. C. Lloyd found the Lark Sparrow fairly common at Ashley Creek marshes during the spring and summer of 1934 and 1935.

Amphispiza nevadensis nevadensis Ridgway. NORTHERN SAGE SPARROW.

Five specimens: Cottonwood Springs; twelve miles southwest of Vernal; and fifteen miles south of Vernal. This sparrow was not found to be abundant in the Basin in 1937. A small nesting colony was found twelve miles southwest of Vernal in a hot, dry, sandy valley dominated by an Atriplex-Tetradymia Community (Graham, 1937). The males were singing from every corner of the valley—a fact which made the incident even more striking and memorable, for this was the first time that I had heard their song. The birds were exceedingly shy and not easily approached. After hunting for some time, I saw a sparrow suddenly fly out of a prickly clump of *Tetradymia* sp. just before I brushed against it. The bird chirped for a few minutes and then flew away. The nest, containing two fresh eggs, was well constructed of dried grass and lined with hair and a few feathers. It was not possible again to visit the nest until July 22, and by that time the female was brooding four heavily incubated eggs. A. C. Lloyd reported that the sage sparrow was abundant five miles west of Vernal in 1934. On several occasions he saw it on the arid shrub desert

that borders the Green River floodplain. Later, (October 8-25) I saw large flocks on the shrub deserts near St. George in southwestern Utah.

***Junco hyemalis hyemalis* (Linnaeus). SLATE-COLORED JUNCO.**

One specimen: two miles south of Jensen (Royal Ontario Museum of Zoology). This specimen was collected by A. C. Lloyd near the Ashley Creek marshes on May 6, 1935. This species is probably more common during migration in the early spring and late fall than this single specimen would indicate.

***Junco mearnsi* Ridgway. PINK-SIDED JUNCO.**

Eight specimens: Jensen; two miles south of Jensen; and Green Lake, Uinta Mountains. This junco occurs as a migrant in the Basin. In early May a few small flocks were noticed along the Green River valley near Jensen. The birds were found to be very abundant in the Yellow Pine Community at Green Lake, Uinta Mountains, from September 11 to 15. During the last week of September they had reached the lower valleys and were passing down the Green River in small flocks, usually associating with migrating sparrows. A. C. Lloyd collected eight specimens, now in the National Museum of Canada, from April 23 to May 16, 1935, at the Ashley Creek marshes.

***Junco mearnsi* < *montanus*. HYBRID BETWEEN THESE SPECIES.**

Two specimens: Jensen. Two of these specimens were taken during the fall migration from small flocks of *Junco mearnsi*. The yellowish pink of *mearnsi* is in evidence over the flanks. The backs are the drab brown of *mearnsi*, but the black pigment of the hood is decidedly more intense, approaching *montanus*.

***Junco caniceps* Woodhouse. GRAY-HEADED JUNCO.**

Twenty specimens: Jensen; Green Lake, Uinta Mountains; Indian Canyon, twenty miles southwest of Duchesne; Paradise Park, Uinta Mountains; and Bald Mountain. This junco was very abundant as a spring migrant along the drainage systems of the Basin throughout May. The birds nested in all the mountains of the Basin from altitudes of 7500 feet to timberline at 10,000 feet. Their range included the Douglas fir, yellow pine, blue spruce, aspen, lodgepole pine and Engelmann spruce-alpine fir forests. The first nests were found at Green Lake, Uinta Mountains, on June 10. The birds at that time could be heard singing

from all corners of the forest. The male always chose the top of a tall pine as a singing post. Considerable activity, consisting chiefly of pursuit and nest-building, was observed here. From June 17 to 20, at Indian Canyon, eighteen nests with fresh eggs were found in the mixed blue spruce, Douglas fir, yellow pine and aspen forest. The nests, averaging four or five eggs, were always on the ground, generally under a protecting shrub or a log. These were the most common nesting birds of this region.

At Paradise Park, between July 7 and 10, numerous nests were located, all containing eggs advanced in incubation. Birds in juvenal plumage were seen in large numbers at Bald Mountain in the Englemann Spruce-alpine fir forest from July 16 to 20. These juncos were nesting in larger numbers here than at any other place visited in the Basin. It is of interest that in this locality a *caniceps* \times *mearnsi* hybrid was found. A female of this hybrid was taken from a nest of five eggs and within forty feet of a nesting pair of *caniceps*. There were so many *caniceps* individuals that it was impossible to locate the mate of this hybrid, but if it had shown the *mearnsi* characters of the hybrid, it would have been noticed at once among the nesting *caniceps* population. This hybrid bird has the red back of *caniceps* but with a yellowish tinge, and the pink flanks of *mearnsi*. In other respects the bird shows the characters of *caniceps*. Alden H. Miller (1939) remarks that in the *caniceps* \times *mearnsi* hybrids, the *mearnsi* yellow pigment is dominant over the red of *caniceps*. This genetic character is apparent in the above hybrid.

The first movements of the juncos were noticed on July 25, when a few small flocks were observed at Beaver Creek, Moffat County, Colorado, at an elevation of 6000 feet. Again on August 5 a small flock of four birds was seen south of Jensen on the Green River. The main movement of fall migration was rather slow, for the population remained in the mountains above 8000 feet until after the middle of September. At the Ashley Creek marshes a large migration of juncos started after September 25 but did not reach a peak until the end of the month.

The author wishes to thank Dr. Miller for examining the series of juncos from the Uinta Basin.

***Junco oreganus montanus* Ridgway. MONTANA JUNCO.**

Four specimens: two miles south of Jensen. This junco was noticed in the Basin only as a migrant (September 28 and 30). The birds appeared in small flocks of eight or ten, mixed with large migrating flocks of *Junco caniceps*. These few birds were the only juncos of this race recorded, but

the migrating population was probably larger than these observations warrant. Later, from October 14 to 22, a large migration of *montanus* was observed in the vicinity of St. George in southwestern Utah.

***Spizella passerina arizonae* Coues. WESTERN CHIPPING SPARROW.**

Twenty-one specimens: Jensen; Green Lake; Ashley Canyon, near Jensen; Paradise Park, Uinta Mountains; Bald Mountain; Yampa River, eight miles north of Elk Springs; Hill Creek, forty miles south of Ouray; and Uinta Canyon, twenty miles north of Roosevelt.

These sparrows were common spring migrants, passing along the drainage systems of the Basin in early May. Following the watercourses into the mountains, they nested from the yellow pines to timberline. The greatest nesting population was observed between June 30 and July 3 at Green Lake, where six nests with young almost ready to leave were found. The nests were located in young pines, between five and twenty feet above the ground. Young birds, barely able to fly, were encountered in the *Picea-Abies* Community at Paradise Park, from July 7 to 10. When we visited Bald Mountain, the coniferous forest seemed overrun with young chipping sparrows that were just out of the nest. The last young bird seen was in Uinta Canyon, twenty miles north of Roosevelt, on August 29. At Green Lake, September 11 to 15, this species was beginning to gather in large flocks preparatory to the migratory move to lower levels. The first fall migrants were encountered on September 20 near Jensen. From then until the end of the month the number of chipping sparrows kept increasing as they passed down the Green River valley in flocks of from twenty-five to two hundred birds. When I left the Basin, on October 1, their migration still was progressing.

***Spizella breweri breweri* Cassin. BREWER SPARROW.**

Nine specimens: Jensen; fifteen miles southwest of Vernal; and Strawberry Reservoir. This sparrow passed through the Basin in fairly large numbers during the spring migration. The first birds were noticed by May 7. A few nested in the sagebrush, rabbitbrush, and greasewood flats around the Ashley Creek marshes. A young bird was collected at the edge of the greasewood, five miles south of Jensen, on August 25. Brewer sparrows were common on the big grass and sagebrush flats at Strawberry Reservoir. The first noticeable migration of these sparrows started about September 21, and flocks of from fifty to one hundred were seen frequently until the end of the month. A. C. Lloyd collected a few Brewer

sparrows in the vicinity of the Ashley Creek marshes between May 6 and 8, 1935.

***Zonotrichia leucophrys leucophrys* (Forster). WHITE-CROWNED SPARROW.**

Seventeen specimens: Jensen; Paradise Park, Uinta Mountains; Bald Mountain; and Heber.

This was one of the most common sparrows in the Uinta Mountains. The birds passed up the Green River in large flocks of from forty to two hundred birds from early May until the 20th of the month. During their steady movement north and into the high mountains, they kept to the densest cover along the floodplains. They were encountered first at Paradise Park, at an altitude of 10,000 feet, in the Picea-Abies Community. Here in the spruce-fir forests they nested in large numbers. Their melodious songs were characteristic of these forests in summer. Their nests were everywhere, generally at the edges of small clearings, under shrubs, logs, or anything that afforded a little protection. Without making a special effort to look for these nests, from four to ten were found each day while I was working through the forests. Most of them contained four or five eggs, that were well incubated or had just hatched. Juvenal birds, barely able to hop about, were noted on several occasions.

While in the Picea-Abies Community of Bald Mountain, July 16-20, white-crowned sparrows were observed to be very plentiful. Most of the young birds, having already left their nests, were found with the adults in dense cover. The males still could be heard singing throughout the Picea-Abies Community and up to timberline. They frequently were seen feeding along the edges of ponds in the alpine meadows, but in these instances there was always a dense growth of shrubs, spruce, or fir near by into which they could fly at the slightest disturbance. The first flocks of migrating sparrows were seen following the Green River floodplain on September 10. This migratory movement continued throughout the month and reached its peak by September 20. They were still plentiful when we left the Basin on October 1. The migration peak was encountered again at St. George in southern Utah on October 16.

***Zonotrichia leucophrys gambeli* (Nuttall). GAMBEL SPARROW.**

Ten specimens: Jensen; Heber; and two miles south of Jensen.

The Gambel Sparrow, using the Green River valley as the main migratory route, appeared only as a migrant in the Uinta Basin. In the spring

a single male was taken from a large flock of *Zonotrichia leucophrys leucophrys* on May 4. A great many white-crowns were in migration during May; the greater part were *Zonotrichia leucophrys leucophrys*. In September the first of the migrating *gambeli* were observed near Heber on the Provo River, when the birds passed through the Provo Canyon. From September 10 to 20, at the Ashley Creek marshes, the migrating white-crown population was principally the local breeding *leucophrys*. The peak of the white-crown migration came on September 20 and continued until after I left in late September. The greater number passing down the Green River valley then were *gambeli*.

***Passerella iliaca schistacea* (Baird). SLATE-COLORED FOX SPARROW.**

One specimen (No. 521, Brigham Young University collection): Long Lake, at the head of Ashley Creek, Uinta Mountains.

This specimen, collected by C. L. Hayward on July 21, 1930, is the only available evidence of the Slate-colored Fox Sparrow in the Uinta Basin.

***Melospiza lincolni lincolni* (Audubon). LINCOLN SPARROW.**

Eight specimens (one female, seven males): twelve miles east of Vernal, and two miles south of Jensen.

The average measurements for these spring and fall migrants were: males, wing, 62.3, tail, 58.4; females, wing, 58.0, tail, 56.0 mm.

They first appeared on May 1 and migrated through until May 15. During the fall the first to appear came September 20, followed by a heavy migration that lasted until the end of the month. Although some of the birds were definitely rusty on the back, they all showed a light yellowish gray wash over the dorsal surface. *Melospiza l. lincolni* did not breed in the Basin, although throughout both the spring and fall migrations it was found with the race *Melospiza lincolni alticola*.

***Melospiza lincolni alticola* Miller. MOUNTAIN LINCOLN SPARROW.**

Eleven specimens: Bald Mountain; Green Lake, Uinta Mountains; two miles south of Jensen; and near Jensen. The spring migrants that passed up the Green River valley were in mixed flocks with *Melospiza lincolni lincolni*. The breeding birds found on Bald Mountain, twenty-five miles northeast of Kamas, at an altitude of 10,500 feet, were found in a bog in the spruce-fir forest. The average measurements of the four breeding males collected were: wing, 65.4; tail, 58 mm. From July 16 to

20 these birds were feeding fully feathered juvenal birds that were able to fly.

Lincoln sparrows appeared first in migration by the first of September but did not reach their peak until the 20th of September. From this date until the end of the month, they were abundant throughout the lower drainage systems of the Basin. There was again a mingling of the two races during this period. The specimens representing *Melospiza lincolni alticola* averaged for the males: wing, 66.1 mm; tail, 61.5 mm. The female: wing, 64.3 mm; tail, 60 mm. In all of these specimens the dorsal surface was a dull brown with a distinct rusty wash. *Melospiza lincolni alticola* is the breeding form on the south slope of the Uinta Mountains. Here they are not particularly abundant, occurring only in isolated localities. These locations are in the lodgepole pine and spruce-fir forest in local bog communities.

Melospiza melodia juddi Bishop. DAKOTA SONG SPARROW.

Four specimens: from two miles south of Jensen, in the National Museum of Canada. A. C. Lloyd collected these specimens during the spring migration of 1935 in the vicinity of Ashley Creek marshes. P. A. Taverner identified them as *Melospiza m. juddi*. The breeding population of the Basin is *Melospiza m. fallax*. In migrations, at least in the spring, a few of the race *Melospiza m. juddi* pass up the Green River valley on their northward route.

Melospiza melodia fallax (Baird). MOUNTAIN SONG SPARROW.

Thirty-five specimens: Jensen; two miles south of Jensen; Beaver Creek, Colorado; Hill Creek, forty miles south of Ouray; Strawberry Reservoir; Uinta Canyon, twenty miles north of Roosevelt; and Heber.

In 1937 song sparrows were not abundant at any time in the Basin. During the spring migration of 1935, A. C. Lloyd collected specimens on April 23; whereas in 1937 the breeding population was not well established along the Green River until May 7. Throughout the remainder of May and June, song sparrows were heard singing at widely separated localities along the floodplains of the drainage systems. They were found in the densest cover, usually in the willows not far from water. Breeding birds were taken in the vicinity of Jensen, and young were collected at Strawberry Reservoir and Uinta Canyon, and also at Beaver Creek, Colorado. The fall migration became apparent on September 28, when this species was numerous around the Ashley Creek marshes.

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